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ABSTRACT

This manual consists of glossaries and descriptions of medical terminology for use in a workplace literacy program for hospital workers. The sections are as follows: hospital patient care areas; hospital departments; medical specialists; word elements (root, prefix, suffix, combining vowel, compound word); surgical procedures; diseases and conditions; colors; medical instruments and machines; number prefixes; frequency of treatment and medications; military time; reading a prescription; regions and directions in the body; introduction to body systems; skeletal system; muscular system; integumentary system; nervous system; respiratory system; circulatory system; digestive system; excretory system; endocrine system; reproductive system; genetics; metric system; common medical abbreviations; medical and chemical symbols; and additional vocabulary. Diagrams of anatomical systems are provided for students to label with appropriate body parts. (SK)

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INTRODUCTION TO MEDICAL TERMINOLOGY

**FOR CLARETIAN MEDICAL CENTER
WORKER EDUCATION PROGRAM OF NORTHEASTERN ILLINOIS UNIVERSITY'S CHICAGO TEACHERS' CENTER
IN PARTNERSHIP WITH THE UNION OF NEEDLETRADES, INDUSTRIAL, TEXTILE EMPLOYERS (UNITE)**

**Prepared by:
MARYLAND HOSPITAL SKILLS ENHANCEMENT PROGRAM**

**Administered by Essex Community College, Baltimore MD
with a grant from The United States Department of Education
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MEDICAL TERMS
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MEDICAL TERMS

OBJECTIVES

At the end of this class, student will:

1. Be aware of the types of hospital departments and how they relate to patient care.
2. Know how to use a medical dictionary and health encyclopedia.
3. Be aware of the various physician specialties.
4. Understand and recognize the parts of a medical term.
5. Be able to recognize the root words for many body parts.
6. Be able to recognize common prefixes and suffixes.
7. Be able to attack words that are unfamiliar with the skills taught.
8. Be able to recognize some common diagnostic tests and when they are performed.
9. Have a basic understanding of the metric system and how it applies to a hospital environment.
10. Be familiar with some common abbreviations.
11. Have an introductory knowledge of body systems and their functions.

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HOSPITAL PATIENT CARE AREAS

MEDICAL HALL	For the care of patients with medical problems. Some may be specialized for the care of patients with cancer (oncology), elderly (geriatrics), or renal (kidney) and heart (cardiology) problems.
SURGICAL	For pre-operative and post-operative care of patients. Orthopedics may be considered a specialized hall for surgical patients.
PEDIATRICS	For children and young adults 18 years old and under.
LABOR AND DELIVERY	For childbirth.
FULL TERM NURSERY	For healthy new born infants.
POST PARTUM	For mothers to recuperate from childbirth.
INTENSIVE CARE UNIT	For the care of patients who require close observation and cardiac monitoring and sometimes use of a ventilator. PICU Pediatric Intensive Care Unit MICU Medical Intensive Care Unit CCU Coronary Care Unit SICU Surgical Intensive Care Unit NICU Neonatal Intensive Care Unit
STEP DOWN UNIT	A nursing hall that may provide cardiac monitoring or other technical assistance. Often, the nursing/patient ratio is more than a regular hall, but less than an intensive care unit. May also be called an Intermedite Care Unit (IMC)
EMERGENCY ROOM	For the treatment of conditions requiring immediate attention due to sudden illness or trauma. Many patients are treated and released in the same day.
PEDIATRIC EMERGENCY ROOM	For children.
CHEST PAIN EMERGENCY ROOM	Provides treatment for those patients who may have heart problems.
TRIAGE	A system of classifying the sick and wounded to determine priority of care.

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TRIAGE AREA	A section of the emergency room. The triage nurse determines which patients require immediate care.
OPERATING ROOM	For surgical procedures.
RECOVERY ROOM	Also called the PACU (Post anesthesia care unit). For the care of patients recovering from anesthesia usually from surgical procedures.
AMBULATORY SURGICAL CENTER	For surgical procedures that do not require a hospital recovery. May also be called an outpatient surgicenter.

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HOSPITAL DEPARTMENTS

PATIENT RELATED

AUDIOLOGY	Performs hearing evaluations.
CARDIOLOGY	Performs diagnostic tests for the heart. A few examples would be EKG'S, echocardiograms, stress testing.
CHAPLAINCY	Serviced by ministers, priests, and rabbis who minister to the spiritual needs of patients.
DIETICIAN	Has been trained in nutrition. Works with the physician in developing special diets, nutrition consultation with patients, and tube feedings.
DIALYSIS	Removes waste from the body. Used when the kidneys are not functioning properly.
ENDOSCOPY	Performs testing on the gastrointestinal area. This department is often called the GI department.
HOSPICE	Counsels and helps the family and the terminally ill patient.
NEUROLOGY	Performs studies on the brain and nervous system.
OCCUPATIONAL AND PHYSICAL THERAPY	Utilizes hydrotherapy, heat therapy, cold therapy, exercise and massage for rehabilitation. Speech therapy may also be included.
PHARMACY	Provide medications, intravenous solutions, and hyperalimentation solutions.
RADIOLOGY	One of the largest departments. May include x-rays, radiation oncology, nuclear medicine, CAT scan, and MRI.
RESPIRATORY THERAPY	Treats patients with breathing problems. (Operating ventilators)
ULTRASOUND	Use of ultrasonic sound directed into a body structure.

SUPPORT SERVICES

ACCOUNTING	Consists of two areas: patients' accounts and financial accounts.
ADMITTING	Acquires patient data for admission form including insurance and consent. Assigns patients beds and transports patient to receiving hall.

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AUXILIARY	Trains and assigns volunteers. Candy stripers are high school students who assist on nursing halls. They pass out water pitchers, run errands, help patients who are discharged. Adult volunteers work in all areas including possibly managing the gift shop. Volunteers are very important to hospitals.
BIOMEDICAL ENGINEERING	Maintains all patient care equipment. Also makes recommendations on purchasing and design of equipment.
BUSINESS OFFICE	Provides services related to insurance, billing, and collection of payments.
CENTRAL SUPPLY DEPARTMENT	Includes purchasing, and maintaining inventory of all hospital supplies. Sterile supply is the area where reusable equipment and supplies are sterilized and kept in a sterile environment until needed by patients.
COMMUNICATIONS	Telephone operators who answer incoming calls at the main hospital line. She/he also contacts personnel through long range paging systems and makes announcements over the in-hospital intercom.
DIETARY	Provides meals for patients. This includes menu planning and providing meals for patients on special diets.
DISCHARGE PLANNING & SOCIAL WORK	Active with nursing home placement, home health care needs, and as a resource for patient's family.
HOSPITAL INFORMATION SYSTEM	Maintains all computer systems in the hospital. Some hospitals may refer to this as communications.
HOUSEKEEPING	Keeps the hospital clean. This includes the patients' rooms and all areas of the hospital. Often called Environmental Services.
HUMAN RESOURCES	Interview applicants for jobs, check references etc. They are also knowledgeable on administrative policies and employee benefits.
LABORATORY	Staffed by technologists and technicians who perform diagnostic studies on a variety of body specimens.
LAUNDRY	Cleans all of the hospital linens. Some linens may need special treatment due to possible allergic reactions of the patients.
MAINTENANCE	Responsible for keeping the hospital and its surroundings in good condition. The Engineering department provides maintenance of heating, air conditioning, water, power and sewage systems.

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MEDICAL RECORDS	Library of permanent records of patients who have been treated in the facility. Records must be accurate, carefully coded, analyzed, indexed and filed.
MEDICAL STAFF	Consists of doctors who have passed the state board examinations and are licensed to practice. They are responsible for the diagnosis and treatment of patients in the hospital.
NURSING	Takes care of patients and follows orders the physician has written. May have others helping them such as nursing assistants and technicians.
PUBLIC RELATIONS	Creates hospital's print materials. Helps organize and advertise health fairs and other community events. Works with the media when a public figure has been admitted as a patient.
SECRETARY	Works in all hospital areas. Unit secretaries work on the nursing units, transcribing doctor's orders.
SECURITY	Provide protection for employees, patients, and visitors. May also help with combative patients.
SUBSTANCE ABUSE COUNSELING	Provides counseling services for patients with drug and alcohol problems.
TRANSPORTATION	Often called Escort Services. Provides transportation of the patient to and from the units.

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MEDICAL SPECIALISTS

SUFFIX OLOGY - STUDY OF

OLOGIST
IST
IATRIST
ICIAN
ER
} PERSON WHO PRACTICES THE SCIENCE. (MAY NOT NECESSARILY BE A PHYSICIAN.

PREFIX	ROOT WORD	SUFFIX	
	ALLERG	IST	ALLERGIST - Physician skilled in the diagnosis and treatment of allergic diseases.
AN (WITHOUT)	ESTHESIA (FEELING)	OLOGIST	ANESTHESIOLOGIST - Physician who specializes in the administration of a drug or gas that produces loss of sensation to pain and sometimes loss of consciousness.
	CARDI (HEART)	OLOGIST	CARDIOLOGIST - Physician: Heart Specialist
	DERMA (SKIN)	OLOGIST	DERMATOLOGIST - Physician: Skin Specialist
	ENDOCRIN	OLOGIST	ENDOCRINOLOGIST - Physician who specializes in diseases related to the endocrine glands.
	GASTRO (STOMACH) ENTER (SMALL INTESTINE)	OLOGIST	GASTROENTEROLOGIST - Physician who specializes in diseases and disorders related to the digestive tract.
	FAMILY PRACTITIONER (NO ROOT OR SUFFIX)		Physician who treats all members of the family regardless of age or sex.
	GERI (ELDERLY)	ATRIST	GERIATRIST - Physician who specializes in the diseases related to the elderly patient.
	GYNE (WOMEN)	OLOGIST	GYNECOLOGIST - Diagnoses and treats disorders of female reproductive organs. Most gynecologists are also surgeons.
	HEMA (BLOOD)	OLOGIST	HEMATOLOGIST - Pathologist who studies in the study of blood cells and the blood-forming mechanisms of the body

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PREFIX	ROOT WORD	SUFFIX	
	INTERN	IST	INTERNIST - Physician who specializes in the diagnosis and treatment related to the internal organs without the use of surgery. May also serve as a primary care physician.
	MEDICAL DOCTOR (NO ROOT OR SUFFIX)		MEDICAL DOCTOR - Often called a physician, has been through 4-years of pre-medical studies, 4-years medical school, and at least 1-year of internship. She must pass state board examinations and licensing. In addition, she may spend 1-7 years of residence in a specialty of choice.
NEO (NEW)	NAT (BIRTH)	ALIST	NEONATALIST - Physician who specializes in the diagnosis and treatment of newborn babies with problems.
	NEPHR (KIDNEY)	OLOGIST	NEPHROLOGIST - Physician who specializes in diseases related to the kidney.
	NEUR(O) NERVE	OLOGIST	NEUROLOGIST - Physician who specializes in the diagnosis and treatment related to the brain, spinal cord and nerves.
	NUCLEAR PHYSICIAN (NO ROOT OR SUFFIX)		Physician who specializes in nuclear medicine.
	OBSTETR	ICIAN	Physician who specializes in the treatment of women during pregnancy, labor, and post partum.
	ONC (TUMOR)	OLOGIST	ONCOLOGIST- Physician who specializes in the diagnosis & treatment of cancer patients.

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PREFIX	ROOT WORD	SUFFIX	
	OPHTHALM (EYE)	OLOGIST	OPHTHALMOLOGIST - Physician who specializes in the diagnosis and treatment of patients with eye problems. Treatment frequently includes surgery. OPTOMETRIST - Person trained and licensed to test visual activity and to prescribe corrective lenses, but not to prescribe drugs or perform surgical procedures. OPTICIAN - Person trained and licensed to grind lenses to fill prescriptions for corrective eyeglasses.
	ORTH (STRAIGHT)	OPEDIST	ORTHOPEDIST - Surgeon who specializes in diagnosis and treatment of problems related to musculoskeletal system.
OSTEO (BONE)	PATH (DISEASE)		OSTEOPATH - Physician specializing in the treatment of disorders by ensuring proper formation and alignment of the muscles and bones as well as by traditional methods.
	PATH (DISEASE)	OLOGIST	PATHOLOGIST - Physician who specializes in laboratory science. Most specialize in the cause of disease.
	FORENSIC PATHOLOGIST (CORONER)		Specializes in the cause of death.
	PED (CHILD)	IATRICIAN	PEDIATRICIAN - Specializes in the developing child and treatment of disease in children.
	POD (FOOT)	IATRIST	DPM; specialist in the care of feet, including X-ray, surgery, and various therapies and medication.
	PSYCH (MIND)	OLOGIST	PSYCHOLOGIST - Ph.D Group and individual counseling and testing; treats emotional disorders but cannot prescribe medication.

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PREFIX	ROOT WORD	SUFFIX	
PERI (AROUND)	NAT (BIRTH)	ALIST	PERINATALIST - Physician who specializes in problem pregnancies. May also specialize in fertility problems.
	PHYSIATRIST	IATRIST	Physician who specializes in the diagnosis and treatment of neuromuscular diseases utilizing physical aids and various types of rehabilitative measures.
	PROCT (RECTUM)	OLOGIST	PROCTOLOGIST - Physician who specializes in the diagnosis and treatment of diseases related to the rectum. Treatment frequently includes surgery.
	PSYCH (MIND)	IATRIST	PSYCHIATRIST - Physician who specializes in the diagnosis and treatment of mental and emotional disorders.
	RAD (RADIUM)	IOLOGIST	RADIOLOGIST - Physician who specializes in the use of radiant energy in diagnostic and therapeutic procedures.
	RHEUMATIC (PERTAINING TO GENERAL FEELING OF MUSCLE AND JOINT STIFFNESS)	OLOGIST	RHEUMATOLOGIST - Physician who specializes in diagnosis and treatment of rheumatic disease including arthritis, gout and others.
	SURGEON (NO ROOT, SUFFIX OR PREFIX)		Physician who specializes in the diagnosis and treatment of disease using surgical procedures. Many specialties exist within this specialty.
	SPORTS MEDICINE		Concerned with prevention and treatment of injuries related to sports.
	TRAUMA	TOLOGIST	TRAUMATOLOGIST - Physician who specializes in Emergency Room medicine.
	UR (URINE)	OLOGIST	UROLOGIST - Physician who specializes in diagnosis and treatment of problems related to the urinary tract.

WORD ELEMENTS

Medical words are composed of word parts that generally have Latin or Greek origins. A student can determine the meaning of a word by learning the meaning of its word parts.

ROOT	The body or main part of the word that denotes the meaning of the word as a whole.
PREFIX	Always added to the beginning of a root. A prefix could change or add to the meaning of the word.
SUFFIX	Always added at the end of the root. It could also change or add to the meaning of the word.
COMBINING VOWEL	Added sometimes between elements for ease in pronunciation. The vowel is usually an O.
COMPOUND WORD	Two or more root words together. The resulting word describes the disease or treatment more accurately. May also contain a prefix or suffix.

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ALPHABETICAL LIST OF WORD PARTS

ROOT WORDS

abdomin/o	abdomen
aden/o	gland
an/o	anus
andr/o	man
angi/o	vessel (lymph, blood)
append	appendix
appendic/o	appendix
arteri/o	artery
arthr/o	joint
bronch	bronchus
cardi/o	heart
carp	wrist
cephal/o	head
cerebr/o	cerebrum (part of the brain)
cheil/o	lip
chol/e	gall, bile
choledoch/o	common bile duct
chondr/o	cartilage
col/o	colon (large intestine)
cost/o	rib
crani/o	cranium (skull)
cyst/o	bladder
dent/o	tooth
derm/o	skin
dermat/o	skin
duoden/o	duodenum (small intestine)
encephal/o	brain
esophag/o	esophagus
gastr/o	stomach
gloss/o	tongue
gnath	jaw
gyne	woman
hem/o	blood
hepa, hepat/o	liver
hyster/o	uterus
ile/o	ileum (small intestine)
irid/ o	iris
kerat /o	cornea of eye; horny substance
lamina	thin flat part of vertebra
lapar/o	abdomen
lingua	tongue
lip	fat
lobe	lobe, as of lung
mast/o,	breast

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mamm/o	breast
my/o, myos	muscle
myel/o	spinal cord; bone marrow
myring	eardrum
neur/o	nerve
nephr/o	kidney
onych/o	nail
oophor/o	ovary
ophthalm/o,	eye
opt/o	eye
orchi/o	testicle
osse/o	bone
oste/o	bone
ot/o	ear
pancreat/o	pancreas
ped	foot, child
pelv/i	pelvis
phall	penis
pharyng/o	pharynx
phleb/o	vein
phren	mind
pleur/o	lining membrane of chest cavity
pneum/o	lungs
pod	foot
proct/o	rectum, anus
prostat/o	prostate gland
psych/o	mind
pub/o	pubes (pubic bones)
pyel/o	pelvis of kidney
rect/o	rectum
ren/o	kidney
rhin/o	nose
sacr/o	sacrum
salping/o	fallopian tube or eustachian tube
soma	body
splen/o	spleen
spondyl/o	vertebra
steth/o	chest
stomat/o	mouth
tars	ankle
ten/o,	tendon
tend/o,	tendon
tendin/o	tendon
thorac/o	thorax (chest)
thyr/o	thyroid gland
trache/o	trachea
tympan/o	eardrum
ureter/o	ureter

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vas/o	vessel
ven/o	vein

SURGICAL PROCEDURES

SUFFIXES

o/centesis	surgical puncture to remove fluid
ectomy	to excise or cut out surgically
o/lysis o/lytic o/lyzed	destruction, to separate out
o/stomy	a surgical opening into an organ or part
o/tomy	surgical incision into an organ or part
o/rrhaphy	surgical repair
o/pexy	fixation or suturing
o/plasty	plastic surgery (surgical reforming or molding to improve function) to relieve pain; for cosmetic reasons
opsy	to view
otripsy	crushing, destroying

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DISEASES AND CONDITIONS

ROOT WORDS, SUFFIXES, PREFIXES

algia	pain
cele	rupture, swelling, or hernia
cryo	cold
crypt	hidden
gravid	to bear children
hydro	water
itis	inflammation of
malacia	softening
necr/o	dead (decaying)
oid	like, similar to
oma	tumor
osis, iasis	condition of
par	to bear children
partus	birth
phag/o	eating, swallowing
phasia	speech
phonia	voice
py	pus
opathy	any disease of
opia	vision
o/rrhea	flow or discharge
o/rrhagia	hemorrhage (blood bursting forth)

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o/rrhexis	to break open
paresis	weakness
path	disease
plasia	growth (cells)
plegia	paralysis
pnea	breathing, air, lungs
ptysis	to spit
schizo	split
sclero	hardening
spasm	spasm, contraction, twitching
stasis	slowed down (sluggish)
therapy	treatment (to cure or alleviate symptoms)
therm	heat
thrombo	clot
trophy	development

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ADDITIONAL PREFIXES

a, an, ar	not or without
ab	away from
acro	extremities, top or extreme point
ad	toward, near
aero	air
ante	before, forward
anti	against
brady	slow
contra	against or not
de	take away, remove
dia	through (as in running through)
dis	from
dys	painful or difficult
eu	good, easy
hemi	half (one side)
hetero	different
homo, homeo	resemblance or sameness
hyper	too much, high
hypo	not enough, low, or under
inter	between
intra	within
iso	equal, same
mal	bad, poor

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megalo	large (enlarged)
megaly	large (enlarged)
meno	menstruation
multi	many
noct	night
pan	all, every
poly	many, much
pre	before
post	after, following
pro	preceding, coming
re	to put back
sym, syn	going together, united
tachy	fast
ur, uro	urine

Suffixes Meaning:

ac	ical
al	ile
ar	ior
ary	ory ous
ic	

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COLORS

ROOT WORD	MEANING	EXAMPLES
chrom/o or at	color	chromosome soma= body
cyan/o	blue	cyanosis condition of blueness
cirrh	orange	cirrhosis: describes the color of the liver with this disease
erythr/o	red	erythrocyte redcell
rub	red	rubella
leuko	white	leukocyte white blood cell
alb	white	albinism
melan/o	black	melanoma "black tumor" highly malignant tumor of the skin that metastasizes
xanth	yellow	xanoderma " yellow skin"
poli/o	gray	poliomyelitis inflammation of the gray matter of the spinal cord

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MEDICAL INSTRUMENTS AND MACHINES

O/SCOPE	instrument for looking into
O/SCOPY	procedure using a scope

Most scopes have a light at one end. It is inserted into an opening, and the light allows the physician to see deep into the cavity or organ.

There are three exceptions. A fetoscope is for listening to the heart of a fetus. A speculum is used for looking into and is not a scope. A stethoscope is not used for looking. It is used for listening.

O/METER	instrument that measures or counts
OMETREY IMETRY	Procedure using the above instrument
O/GRAPH	machine that records
O/GRAPHY	diagnostic procedure
O/GRAM	recording or "picture" produced by the above procedure

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PREFIXES RELATING TO NUMBERS

uni	1
bi	2
tri	3
quadri	4
multi	many
diplo	double
ambi	both sides
semi	half or partially
primi	first

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TERMS USED FOR FREQUENCY OF TREATMENT AND MEDICATIONS

Q	EVERY
QD	EVERY DAY
QS	EVERY SHIFT
QOD	EVERY OTHER DAY
QOW	EVERY OTHER WEEK
BID	TWICE PER DAY
TID	THREE TIMES PER DAY
QID	FOUR TIMES PER DAY
QHS	AT HOUR OF SLEEP
PRN	AS NEEDED
ac	BEFORE MEALS
pc	AFTER MEALS
X	FOR
STAT	IMMEDIATELY
gt	DROP
gtt	DROPS
$\frac{\cdot}{\text{I}}$	ONE
$\frac{\cdot\cdot}{\text{II}}$	TWO
$\frac{\cdot\cdot\cdot}{\text{III}}$	THREE

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MILITARY TIME

12:01 AM	0001	12:00 NOON	1200
1:00 AM	0100	1:00 PM	1300
2:00 AM	0200	2:00 PM	1400
3:00 AM	0300	3:00 PM	1500
4:00 AM	0400	4:00 PM	1600
5:00 AM	0500	5:00 PM	1700
6:00 AM	0600	6:00 PM	1800
7:00 AM	0700	7:00 PM	1900
8:00 AM	0800	8:00 PM	2000
9:00 AM	0900	9:00 PM	2100
10:00 AM	1000	10:00 PM	2200
11:00 AM	1100	11:00 PM	2300
12:00 NOON	1200	12:00 MIDNIGHT/AM	2400

MINUTES ARE WRITTEN AS A NUMBER. A FEW EXAMPLES ARE:

12:30 AM	0030
6:10 AM	0610
1:30 PM	1330
10:45 PM	2245

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READING A PRESCRIPTION

Understanding a drug order is important in hospitals and at home. Every prescription has 5 components to make it complete

1. Name of drug.

2. Dosage. (How much?)

3. Route of administration. How is it going into the patient. It can be by mouth (PO), intramuscular (IM), subcutaneous (SC), intravenously (IV), sublingual, or under the tongue (SL), onto the skin (topically) or with the use of a patch, drops into the ears, eyes, or nose and suppositories.

4. Time of administration. (When?)

5. Qualifying phrase. (Why?)

   Example : ASA 1 tab. PO Q 4 hrs. PRN Myalgia

   Aspirin 1 tablet by mouth every 4 hrs as needed for muscle pain

Sometimes, a large dose at once may precede the routine dosage that the physician has prescribed. This large dose may be referred to as a bolus or loading dose. This happens frequently with antibiotics. See the following example:

Gentamicin 125 mg IV bolus then
Gentamicin 75 mg IV Q 4 hrs.

Hospital pharmacies cannot provide all medications that are available. Their inventory of medications may be referred to as a formulary. If a physician orders a non - formulary medication, the pharmacist may recommend a medication that they have.

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REGIONS AND DIRECTIONS IN THE BODY

ANATOMICAL POSITION	person is standing straight, facing you with palms out and feet together
ANTERIOR	toward the front
POSTERIOR	toward the back or in back of
LATERAL	side
BILATERAL	both sides
MEDIAL	middle
OBLIQUE	at an angle
SUPERIOR	above (supra)
INFERIOR	below (sub) (infra)
CEPHALIC	head
CAUDAL	base of spine
PROXIMAL	nearest to the center
DISTAL	farthest from the center
PERIPHERAL	outer edges
TRANSVERSE	horizontal body plane (trans)
SAGITTAL	vertical body plane, through the trunk of the body
UPRIGHT	standing
DECUBITUS	lying down
RECUMBENT	lying down
SUPINE, SUPINATION	face up, or palm up
PRONE, PRONATION	face down, or palm down
ROTATION	turning
EVERSION	turning outward , or inside out
FLEXION (flexing)	bending
EXTENSION (extending)	straightening
INTERNAL	inside
EXTERNAL	outside
ADDUCTION	toward the midline
ABDUCTION	away from the midline
QUADRANT	referring to parts of the abdomen

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INTRODUCTION TO BODY SYSTEMS

ANATOMY — The study, classification, and description of structures and organs of the body

PHYSIOLOGY — The study of how the body functions and how all the body parts work independently and together.

PROTOPLASM — The substance that all living things are made of.

CELL — Fundamental building block of all living organisms. The nucleus is the center of the cell where reproduction takes place.

METABOLISM — The sum of all physical and chemical changes in the body.

CHARACTERISTICS OF CELLS

1. Cells undergo physical and chemical changes.
2. Many cells reproduce themselves.
3. Some cells reproduce more readily than others.
4. Many cells are replaced because of injury, poor health, or death.
5. Some cells are not replaced.
6. Worn out, unhealthy, and injured cells are eliminated primarily in the liver, spleen, and bone marrow.
7. Worn out, unhealthy injured cells are removed from the body by the Reticular-Endothelial System (RES).

Root word cy = cell

CYTOLOGY — The division of the laboratory where slides are prepared using drops or smears of body specimens, including Pap smear, urine for cytology, and pleural (lung) fluids. These cells are studied to rule out the presence of malignant cells.

TISSUE — Consisting of a group of the same type of cells functioning in the same way. Tissue fluid makes up 60-90% of body tissue.

DEHYDRATION — Insufficient fluid in the tissues. Edema is an abnormal collection of fluid in the tissues

Types of tissues

1. Epithelial tissue may have these characteristics:

   A. Secrete mucous or serous fluid.
   B. Sometimes has cilia (hairs) as in the bronchial tubes or fallopian tubes.
   C. Can expand and contract as in the bladder.
   D. Can become very thick and hard as in callouses.
   E. It can repair itself quickly when injured. Some examples include the outer layer of skin (epidermis), glandular tissue, and the lining of organs, body cavities, vessels, and ducts.

2. Connective tissue is made of collagen and elastic fibers. Hard connective tissue includes cartilage. Cartilage is tough, elastic and translucent. It reduces friction between long bones and acts as a shock absorber between the vertebrae.

   Soft connective tissue can repair itself and also repair muscle and nerve tissue. Adipose is fatty tissue and neuroglia is found in the brain, spinal cord, and nerves.

3. Nerve tissue is found in the brain and spinal cord. Nerves consists of clusters of nerve cells (neurons) supported by ordinary connective tissue.

4. Muscle tissue cells are long and threadlike and have the ability to contract and relax.

Organ is a body part where two or more tissues work together to perform a particular function. A few examples are the heart, lungs, and liver.

Body system is a group of organs that are grouped together to perform certain body functions. They are as follows:

1. Skeletal system
2. Muscular system
3. Integumentary system
4. Nervous system (inc. eye & ear)
5. Respiratory system
6. Circulatory system
7. Digestive system
8. Excretory system
9. Endocrine system
10. Reproductive system

SKELETAL SYSTEM

This system is composed of bones and joints. The functions of bones are to give the body shape, support, and stability. They also protect the internal organs, provide locomotion, produce red blood cells, and store calcium and other minerals.

Body cavities formed by the bones are enclosed spaces that protect vital organs. The skull encloses the brain (cranial cavity). The rib cage encloses the heart, large blood vessels, trachea, bronchial tubes, lungs, and esophagus. This is called the thoracic cavity. The spine and bony pelvis enclose the digestive, reproductive, and excretory organs, or abdominal cavity.

The spine consists of 33 vertebra. It is divided into 5 sections. These sections are the cervical, thoracic, lumbar, sacrum and coccyx.

A broken bone is called a fracture. There are different types of fractures. A greenstick fracture is a partially broken bone with bending of the bone. An impacted fracture is a broken bone with one end wedged into the other. A comminuted fracture is a fracture in which a bone is splintered or crushed. A compound or open fracture is a broken bone with an open wound. A simple fracture or closed fracture is a broken bone without a wound in the skin.

JOINTS	areas where one bone connects with one or more other bones. Joints are necessary as levers in all motion.
LIGAMENT	tough, white, fibrous, cord that connects bone to bone.
TENDON	an elastic, cordlike structure that connects muscle to bone.
BURSA	small fluid filled sac that prevents friction allowing one bone to move easily over another.
CARTILAGE	hard connective tissue that covers the ends of bones and provides a cushion for stress and strain.

SKELETAL SYSTEM ROOT WORDS

arthr/o	joint	cost/o	rib
chondr/o	cartilage	orth/	straight/correct
clavic/o	clavicle	oste/o	bone
crani/o	skull	patell/o	kneecap
femor/o	femur	ped	foot
phalang/o	finger or toe bone	my	muscle
myel/o	bone marrow spinal cord	scapul/o	shoulder
spondyl/o	vertebra	vertebr/o	vertebra
stern/o	sternum		

ARTHRITIS	pain in a joint.
CLAUDICATION	limping
CONTRACTURE	permanent contraction of a muscle due to spasm or paralysis
FRACTURE	broken bone
HEMARTHROSIS	effusion of blood into a joint cavity
MALIGNANT NEOPLASM	a new abnormal growth that infiltrates tissue, metastasizes, and often recurs following surgical removal
MYELOMA	tumor originating in the bone marrow
MYOMA	tumor containing muscle tissue
NEOPLASM	new, abnormal formation of tissue, as in tumor or growth
OSTEOARTHRITIS	inflammation of a joint with destruction of the articular cartilage
OSTEOMALACIA	softening of the bone
SARCOMA	cancer arising from connective tissue
SPASM	involuntary movement or muscle contraction
WHIPLASH	injury to the cerebral vertebrae and surrounding tissue produced by sudden jerking forward or backward

DIAGNOSTIC PROCEDURES OF SKELETAL SYSTEM

ARTHROGRAM	x-ray of a joint
BONE MARROW BIOPSY	puncture of the sternum or iliac crest to obtain a specimen of bone marrow
ELECTROMYOGRAM	electrical tracing of the impulses of a muscle
MYELOGRAM	x-ray of the spinal cord following the injection of a radiopaque dye into the subarachnoid space
SPINAL PUNCTURE	puncture into the subarachnoid space to remove spinal fluid

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MUSCULAR SYSTEM

Muscles are tissues with specialized cells that enable them to contract (shorten) and relax (lengthen). This enables them to produce power. The muscular system makes all motion possible inside and outside the body. The muscular system is composed of muscles, tendons, and ligaments.

Striated muscles are called voluntary muscles. They resemble a group of ropes held tightly together. The skeletal muscles are striated muscles. They move the bones of the body, the head, trunk, limbs, tongue, pharynx, and upper part of the esophagus.

Smooth muscles and cardiac muscles are involuntary muscles. Involuntary muscles work on their own. Smooth muscles are found in glands, walls of blood vessels, ducts, hollow organs, and other parts of the body. The cardiac muscle controls the heartbeat. It contracts, and relaxes about 72 times per minute in the average adult.

The origin of a muscle is the point of attachment to a bone that remains stationary when the muscle contracts. The insertion of a muscle is the point of attachment to a bone that is moved when the muscle contracts. Near the point of attachment to bone, the muscle narrows and joins a tendon, a tough band of connective tissue that connects muscle to bone.

Most movement is the coordinated action of several muscles. The muscles not only move the body but produce heat.

Muscles have a large blood supply. This makes the muscle tissue more resistant to infection than all other body tissues.

MUSCULAR SYSTEM TERMS

PARALYSIS	loss of voluntary movement
ATROPHY	muscle mass decreases in size (also called wasting of muscle)
EDEMA	swelling of a tissue or joint
RANGE OF MOTION	each joint is put through its normal range of activity. Can be active (done by the patient) or passive (done by another person)
EXTENSION	to straighten an arm or leg
HYPEREXTENSION	beyond the normal extension
FLEXION	to bend a joint (elbow, wrist, knee)
ROTATION	to move a joint in a circular motion around its axis
AMBULATION	walking or moving about in an upright position

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INTEGUMENTARY

The skin is a membrane covering the entire body. It contains several types of tissue and many sweat glands, oil glands, blood vessels, and hairs. It is considered to be the largest organ in the body. The integumentary system is composed of skin, hair, nails, sweat and oil glands. Its main functions are to protect the body, improve appearance, eliminate waste through the sweat glands, regulate body temperature, and produce vitamin D when exposed to sunlight.

The skin has two layers. The outer layer of skin is the epidermis and the second layer is the dermis. The subcutaneous layer under the dermis is a combination of elastic and fibrous tissue with fatty deposits. Fat is manufactured when more food is taken in than needed. It is stored energy, providing insulation and protection.

INTEGUMENTARY ROOT WORDS

caud	tail
derm/o	skin
hist/o	tissue
path/o	disease
trich	hair
viscer/o	organ
necro	dead (decayed)

ACNE	any inflammatory condition of the skin involving the sebaceous glands
ALBINISM	congenital lack of normal skin pigment
ALOPECIA	baldness
CARBUNCLE	a boil
CYST	closed sac or pouch
DECUBITUS ULCER	pressure sore or "bed sore"
ECCHYMOSIS	bruising
ERYTHEMA	redness
EXCORIATION	a scratch
ECZEMA	an inflammatory condition of the skin producing macules, papules, vesicles, crusts, and scales
GANGRENE	necrosis of the skin
HERPES	viral infection involving the skin
LESION	an area of tissue that has been altered by disease or injury

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PAPULE	**pimple**
PEDICULOSIS	**lice**
PRURITIS	itching
PUSTULE	small skin elevation containing pus
SCABIES	**contagious skin condition caused by a mite that lays her eggs in burrows under the skin**
URTICARIA	hives
VERRUCA	wart
VESICLE	blister

Decubitus ulcers (bed sores) are taken seriously in health care facilities. Body heat and perspiration, plus the pressure from the patient, create the ideal conditions for bacteria to grow. This causes skin break down. Infection can set in very easily.

There are special mattresses (egg crates, soft care) and beds (Kinair, Therapulse) that help prevent this. Nursing personnel are also instructed to turn patients frequently.

Bed cradles may be used to keep the covers off the skin of a patient.

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NERVOUS SYSTEM

The nervous system controls and organizes all body activities. It is composed of billions of specialized cells called neurons. A neuron is the most complex cell in the body. If nerve cells are destroyed they are not replaced. The nervous system makes it possible for a person to speak, hear, taste, smell, see, think, act learn and remember.

The nervous system receives signals from inside or outside of the body and sends the signals to the brain. The brain interprets these signals and sends a message back to the appropriate body part or system.

The cerebrum, in the upper portion of the brain, is divided into hemispheres or halves by a deep groove. Certain areas of the cerebrum perform special activities.

OCCIPITAL LOBE	the place where what you see is interpreted
FRONTAL LOBE	the primary area of thought, reason, and speech
TEMPORAL LOBE	the auditory (hearing) area
PARIETAL LOBE	the awareness of sensations of heat, cold, touch, pressure, and pain

NERVOUS SYSTEM ROOT WORDS

acousia	hearing	aqua	water
audi/o sound	aur/o	ear	
blephar/o	eyelid	cephal/o	head
cerebell/o	cerebellum	cerebr/o	cerebrum
conjunctiv	conjunctiva	crani/o	cranium
dacry/o	tear	encephal/o	brain
gusta	taste	irid	iris
lacri/m	tears	myring	eardrum
ocul/o	eye	olfact	smell
opthalm/o	eye	ot	ear
photos	light	retin	retina
scler/o	hard	tympan/o	eardrum
vitre/o glassy	xeros	dryness	

A person is made aware of changes in the outside environment through special cells called sensory neurons. The eye is the sensory receptor for vision. It is protected by lids, eyelashes, eyebrows, tears, mucous membranes called conjunctiva, and the bony orbit formed by the skull.

SCLERA	white of the eye
VITREOUS HUMOR	transparent liquid that fills the eyeball
AQUEOUS HUMOR	fluid produced in the eye.
CORNEA	clear, plastic-like covering
IRIS	circle of color
PUPIL	the opening in the center of the iris through which light enters

LENS	directly behind the pupil, focuses the image upon the retina
RETINA	back part of the eye, receives images and sends impulses to the optic nerve
OPTIC NERVE	receives impulses from the rods and cones in the retina and transmits them to the brain

The eye can receive and focus light and then convert this energy into nerve impulses to be sent to the brain. The nerve impulses originate from the retina. Visual receptors in the retina, called rods, can work in low light. They have no color function. The visual receptors, called cones, operate in high intensity light and receive colors.

The ear is associated with hearing and equilibrium (balance). Sound waves enter the outer ear and strike the tympanic membrane, causing it to vibrate. The vibration of the membrane causes the tiny bones in the middle ear to move, carrying the sound to the inner ear. Through a complex process, sound stimuli are transmitted to nerves that transport the signal to the brain.

The ear has three parts. The outer ear leads to the small sound opening of the middle ear. The small membrane that separates the outer and middle ear is the eardrum. The middle ear contains the smallest bones in the body. They are the malleus (hammer), incus (anvil) and stapes (stirrup). The cochlea looks like a snail shell and contains the organ of Corti, the sense organ for hearing. This contains cells that are stimulated by sound waves. Sensory impulses are transmitted to the auditory nerve, which transmits them to the center of hearing in the brain.

Olfaction is the sense of smell associated with the mucous membranes that contain the receptor end organs for smell. The sense of taste is associated with the tongue. The taste buds are special sensory nerve cells. The skin has special sensory nerve cells that transmit messages to and from the brain to recognize heat, cold, pain, and pressure.

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NERVOUS SYSTEM TERMS

AMBYLOPIA	"lazy eye"
ANACUSIA	total deafness
ANALGESIA	without pain
ANESTHESIA	without sensation
APHAGIA	inability to swallow
APHASIA	inability to speak
ATAXIA	without muscular coordination
CATARACT	clouding of the lens due to aging, injury, infection
CEREBRAL PALSY	non-progressive paralysis resulting from developmental defects or from birth trauma
CEREBROVASCULAR ACCIDENT	stroke (CVA)
COMA	abnormal stupor
CONJUNCTIVITIS	inflammation of the mucous membrane covering the front of the eyeball and lining the lids; also called pink eye
CONVULSIONS	involuntary muscular contractions and relaxations
DIPLOPIA	double vision
ENCEPHALITIS	inflammation of the brain
EPILEPSY	recurrent disorder of cerebral function characterized by seizures
GLAUCOMA	disorder of the eye characterized by increased pressure within the eyeball
HEMIPARESIS	one sided weakness
HEMIPLEGIA	one sided paralysis
HYDROCEPHALUS	increased accumulation of cerebrospinal fluid in the ventricles of the brain
HYPEROPIA	farsightedness
MULTIPLE SCLEROSIS	chronic, progressive disorder of the central nervous system

MYOPIA	shortsightedness
OTITIS MEDIA	inflammation of the middle ear
OTORRHAGIA	discharge of blood from the ear
OTORRHEA	purulent discharge from the ear
PARAPARESIS	weakness affecting lower limbs
PARAPLEGIA	paralysis affecting lower portion of body and legs Parkinson's Disease- chronic disease of the central nervous system charcterized by fine tremors, muscular weakness, rigidity, and a peculiar gait
POLIOMYELITIS	acute viral disease with inflammation of the gray matter of the spinal cord, frequently resulting in paralysis, muscle atrophy and deformity
QUADRIPLEGIA	paralysis of all four limbs an usually the trunk
SEIZURES	brief attacks of altered consciousness, motor activity, and sensation
SPINA BIFIDA	congenital defect in the walls of spinal canal caused by lack of union of lamina of the vertebrae
SYNCOPE	fainting
STY	localized bacterial infection of a sebaceous gland of the eyelid
TIC	spasmodic muscular contractions involving the face, head, neck, and shoulder muscles
TINNITUS	ringing in the ears
TRANSIENT ISCHEMIC ATTACK	(TIA) signs and symptoms resulting from transient cerebral ischemia,including inability to see, speak, or swallow, dizziness, or staggering
AUDIOGRAM	hearing test performed with an audiometer
ECHOENCEPHALOGRAM	ultrasonic sound is sent into the brain and echoes are amplified and translated into picture on a TV type screen
ELECTROENCEPHALOGRAM	(EEG) electrical tracing of the impulses of the brain
ELECTROMYOGRAM	electrical tracing of impulses of the muscle
OPHTHALMOSCOPY	examination of the interior of the eye using an ophthalmoscope
TYMPANOMETRY	evaluation of the patency and mobility of the eardrum
VISUAL EVOKED RESPONSE	Electrical tracing of occipital lobe response to visual stimuli

RESPIRATORY SYSTEM

The respiratory system produces a pathway for oxygen to get from the air into the lungs. In the lungs, it is picked up by the blood and carried to the cells. Respiration is an exchange of gases between an organism and the environment. The respiratory system is responsible for getting oxygen into the blood where it is carried to the cells of the body.

The medulla , located in the center of the brainstem regulates breathing. The respiratory system is affected if there is disease or injury to the medulla.

Breathing consists of breathing in (inhalation), and breathing out (exhalation). During inhalation,oxygen, enters the lungs. Oxygen enters the blood stream through air sacs called alveoli.

When inhalation occurs:

1. The lung and chest cavity are expanded.
2. The diaphragm moves down.
3. Air is forced into air sacs.
4. Oxygen is absorbed by the venous capillaries at the air sac.

When exhalation occurs:

1. The lungs and chest cavity are contracted.
2. The diaphragm moves up.
3. Air is forced out of the air sacs.
4. Carbon dioxide, removed from the arterial capillaries, is exhaled.

The body uses oxygen and food supply energy for living. Carbon dioxide is a waste product and is exhaled. Air pollution and smoking can destroy the ability for the lung tissue to provide this gaseous exchange. This can cause emphysema. The pleura is a membrane covering the lungs. One layer lines the pleural sac while the other covers the lung. The space between the pleura, called the pleural cavity, contains pleural fluid.

The pharynx is a passageway between the nasal cavities and the top of the windpipe or larynx. The larynx or voice box contains the vocal cords. The epiglottis covers the opening into the trachea (windpipe). It prevents food or fluids from entering the windpipe. Aspiration occurs when small pieces of food, fluid, mucous, or vomitus is taken into the air passages.

The lungs almost stand on the diaphragm, which is a muscular partition that separates the chest cavity from the abdominal cavity. It flattens during inhalation, which allows the lungs to expand. The diaphragm expands on exhalation, reducing the size of the chest cavity.

Respiratory emergencies can be a matter of life or death. Sometimes initiation of CPR or Cardiopulmonary Resuscitation is needed. A CPR class is often available through the American Red Cross and at area hospitals.

Patients with respiratory problems may require treatments and supplies to aid with their breathing. A respiratory therapist is a health care worker who performs diagnostic and therapeutic procedures designed to preserve respiratory function.

Additional oxygen can be provided through the use of a nasal cannula, mask, or ventilator. A nasal cannula is tubing that is fit into the patient's nostrils. A venti-mask creates a moist oxygenated environment. Intubation is the insertion of an endotracheal tube into the windpipe to provide air to the patient when he cannot breathe independently. The machine that provides the breathing for the patient is a ventilator.

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Chest physical therapy (postural drainage) loosens lung secretions. Aerosol therapy combines medications such as Alupent, Proventil, or Bronkosol with a fine mist to improve the quality of breathing. Metered dose inhalers provide medication without the mist. These inhalers are very common and are often used by asthmatics.

RESPIRATORY SYSTEM ROOT WORDS

aer/o	air	alveol/o	air sac
bronch/o	bronchial tube	cyan/o	blue
laryng/o	larynx	nas/o	nose
pharyng/o	pharynx	pneum/o	lung
py/o	pus	rhin/o	nose
thorac/o	thorax	trache/o	trachea

APHONIA	inability to produce speech sounds from the larynx
APNEA	without breathing
ASBESTOSIS	lung disease resulting from breathing in asbestos over a long period of time
ASTHMA	disease characterized by difficulty breathing, wheezing, and a sense of tightness or constriction in the chest due to spasm of the muscles. This causes narrowing of the air passages.
ATELECTASIS	collapsed alveoli
AUSCULTATION	listening for sounds within the body
BRONCHITIS	inflammation of the bronchial tubes
BRONCHOSCOPY	endoscopic examination of the bronchial tubes
COPD	Chronic Obstructive Pulmonary Disease; progressive disease of the lungs resulting in the increased inability of the lungs to perform their function
CYANOSIS	skin appears bluish due to reduced oxygen and excess carbon dioxide in the blood
CYSTIC FIBROSIS	inherited disease involving the respiratory system, and sweat glands
DYSPHONIA	difficulty in producing speech sounds.
DYSPNEA	difficulty in breathing
EMPYEMA	pus in the pleural cavity

EPITAXIS	nosebleed
EXPECTORATION	expulsion of mucous from the throat or lungs
HEMOPTYSIS	spitting up of blood from the respiratory tract
HYPERPNEA	faster, deeper breathing than normal
HYPERVENTILATION	increased rate or depth of breathing accompanied by anxiety
LOBECTOMY	surgical removal of a lobe of a lung
ORTHOPNEA	a condition in which a person can breathe only while sitting upright
PHARYNGITIS	inflammation of the throat; sore throat
PLEURAL EFFUSION	excessive fluid in the pleural cavity
PNEUMONECTOMY	surgical removal of a lung
PNEUMONIA	inflammation of the lungs caused by bacteria, viruses, fungi, or chemical irritants
PNEUMOTHORAX	collection of air in the pleural cavity as a result of perforation or injury through the chest wall or pleura
PULMONARY EMBOLECTOMY	surgical removal of a blood clot in the pulmonary artery or one of its branches
THORACENTESIS	puncture of the chest cavity to remove fluid. Various laboratory tests are performed on the fluid to determine malignancy, infection, and other diseases
TRACHEOSTOMY	surgical opening of the trachea
PULMONARY EMBOLISM	clot in the lung that has come from a thrombus in the legs and is causing obstruction in a pulmonary artery or one of its branches
PULMONARY THROMBOSIS	formation of a clot in the lung tissue
RALES	abnormal sounds in the chest resembling squeaks
RESPIRATORY FAILURE	inability of the lungs to perform their function
RHINITIS	inflammation of the nose
RHINORRHEA	runny nose
RHINORRHAGIA	nosebleed
RHONCHI	abnormal sound in the chest, resembling snoring

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TACHYPNEA	**rapid breathing**
TUBERCULOSIS	**Infectious disease that usually affects the lungs. It can be spread by coughing, wheezing or speaking**

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CIRCULATORY SYSTEM

Another name for the circulatory system is the cardiovascular system. It consists of the blood, blood vessels, heart, and lymph vessels. The vascular system delivers oxygen and nutrients to the tissue cells, picks up the waste products; and delivers them to where they can be eliminated from the body.

The heart is a muscle that acts as a pump for the vascular system. The heart receives blood through the veins and pumps it out through the arteries to all cells of the body. Blood pressure is created as blood circulates through the body. Blood pressure is the measurable force of the blood against the walls of a blood vessel. A healthy heart can pump more than 10 gallons of blood per minute through 60,000 miles of blood vessels. A round trip through the circulatory system takes less than 30 seconds.

The heart is divided into four chambers. The top two are called atria. The bottom chambers are the ventricles.The right atrium gets blood from the body through the superior and inferior vena cava. The right atrium pumps blood through a valve in the right ventricle, which pumps the blood through another valve into the pulmonary artery. The pulmonary artery divides into two arteries and delivers blood to the lungs. In the lungs, the blood picks up oxygen and gets rid of waste gases.

The left side of the heart pumps blood through the aorta. It is the largest artery in the body. Branches of the aorta are sent to the head and upper extremities. Other branches of the aorta go to the heart muscle, and the descending aorta sends branches to the lower extremities and to the trunk.

Patients with heart problems may be admitted on special halls with telemetry. It is a system where the patient's heart action is monitored from a distance.

The lymph system is another circulatory system. Lymph is the fluid that surrounds body cells. It is 95% water. Along the course of the lymph system are lymph nodes. These nodes often become enlarged when infection or disease occurs.

The average adult has 5 quarts of blood in circulation. Plasma is the fluid portion of the blood. The formed elements of the blood are red blood cells, white blood cells, and platelets.

Red blood cells carry oxygen from the lungs to the cells. White blood cells fight infection. Blood platelets come from bone marrow cells and are essential to the clotting of the blood.

Arteries are blood vessels that carry blood from the heart pulmonary artery). Arterioles are tiny arteries that carry blood from the large arteries to the capillaries. Capillaries are the smallest blood vessels in the circulatory system. They allow exchange of oxygen and carbon dioxide through their walls. They nourish all body cells.

Veins are the blood vessels that carry blood back to the heart. Venules are the very tiny veins of the body. They carry blood from the capillaries to the large veins of the body.

Phlebotomists are trained to draw blood. There are many tests that can be done on blood samples. The laboratory in a hospital has medical technologists who perform laboratory tests and evaluate results. There may be many sections inside the medical laboratory. Departments could include microbiology, chemistry, endocrinology, and hematology. Laboratory tests can be performed on all body fluids and specimens.

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CIRCULATORY SYSTEM ROOT WORDS

angi/ o	vessel	aort/o	aorta
arteri/o	artery	cardi/o	heart
erythr/o	red	hem/o	blood
leuk/o	white	phleb/o	vein
pnea	breath	sphygmos	pulse
steth/o	chest	vas/o	vessel
ventricul/o	ventricle	venul/o	venule
ven	vein		

ANEMIA	reduction of red blood cells, hemoglobin or hematocrit in the blood
ANEURYSM	dilation or bulging out of the wall of the heart or blood vessel
ANGINA PECTORIS	condition characterized by pain around the heart radiating to the left shoulder and arm
AORTIC STENOSIS	narrowing of the aorta or the valve leading into the aorta
ARRYTHMIA	irregular heart rate
ARTERIOSCLEROSIS	thickening or loss of elasticity in the arterial wall
ATHEROSCLEROSIS	form of arteriosclerosis characterized by formation of fatty deposits or plaque in the arteries
BRADYCARDIA	slow heart rate
CARDIAC ARREST	cessation of the heart beat
CARDIAC ENZYMES	enzymes normally found in heart tissue. These levels are increased during a heart attack. Often called CPK, CPK MB, LDH, SGOT
CARDIOMEGALY	enlargement of the heart
CARDIOVERSION	electrical charges administered to the chest to stop fibrillation and arrythmia and to return the heart to normal rhythm
CAROTID OCCLUSION	blockage of the carotid artery or arteries due to atherosclerosis
CONGESTIVE HEART FAILURE (CHF)	the inability of the heart to pump sufficient blood through the circulatory system
CORONARY THROMBOSIS	formation of a blood clot in a coronary artery

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DIAPHORESIS	sweating
ENDOCARDITIS	inflammation of the inner surfaces and cavities of heart
HEMATOMA	collection of blood in a localized area
HEMOPHILIA	hereditary condition in which the clotting time of blood is greatly prolonged due to the absence of a clotting factor
HYPERTENSION	high blood pressure
HYPOTENSION	low blood pressure
MITRAL STENOSIS	narrowing of the mitral valve with the obstruction of blood flow from the left atrium to the left ventricle
MYOCARDITIS	inflammation of the muscle of the heart
MYOCARDIAL INFARCTION	heart attack
NECROSIS	death of tissue in a given area due to lack of blood supply and other factors
NORMAL SINUS RHYTHM	normal heart rhythm
PALLOR	paleness
PALPITATION	abnormal rapid fluttering of the heart
PHLEBITIS	inflammation of a vein
SWAN GANZ CATHETER	catheter with a balloon inserted into the pulmonary artery to measure pressure within the heart
TACHYCARDIA	rapid heart rate
THROMBOPHLEBITIS	inflammation of a vein leading to formation of a thrombus
THROMBUS	clot at the site of formation
TRANSIENT CEREBRAL ISCHEMIA	temporary lack of sufficient blood flow to the cerebrum
VARICOSE VEINS	distended, swollen, knotted veins often found in the lower extremities

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CARDIAC CATHERIZATION	angiocardiogram of the heart and coronary arteries following injection of a dye through a catheter into the appropriate blood vessel or heart chamber
ECHOCARDIOGRAM	photograph of echo produced from sound waves emanating from the heart
ELECTROCARDIOGRAM (EKG)	electrical tracing of the impulses of the heart
HOLTER MONITOR	Continuous EKG tracing worn by the patient
MUGA SCAN	Radioactive tracer used to image heart contractions
STRESS THALLIUM	Thallium, a radioactive tracer, is intravenously injected into the heart during a treadmill exercise. Used to rule out heart damage, and restricted arterial flow.
VENOGRAM	x-ray of a vein following intravenous injection of a dye

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DIGESTIVE SYSTEM

The digestive system, also called the alimentary canal, is responsible for breaking down food so that it can be used by the cells of the body. There are four parts to digestion:

1. Ingestion: the taking in of food and fluids through the mouth into the stomach
2. Digestion: the conversion of food and fluids by physical and chemical means into substances that can be used by the body
3. Assimilation: absorption of digested food into the circulatory system for distribution to all parts of the body
4. Elimination: the removal of waste products of digestion from the body.

The teeth and mouth break down food into small pieces. Saliva contains an enzyme called ptyalin that begins the digestive process. The esophagus or food tube connects the pharynx with the stomach. The stomach is lined with a thick wall of mucous to protect it from special digestive secretions called enzymes. These enzymes break down the food.

After leaving the stomach, partially digested food enters the first part of the small intestine called the duodenum. Many chemicals are secreted by the pancreas into a tube that connects to the duodenum. This tube is the main pancreatic duct which joins with the common bile duct.

The common bile duct delivers bile from the gall bladder to the duodenum. Bile helps in breaking down fats so that the pancreas and liver can complete the digestion process.

The pharynx, esophagus, stomach, small intestine, colon, and rectum are lined with muscle. The muscle pushes the food through by contractions called peristalsis. The food reaches a valve at the end of the small intestine. Water and undigested food enter the colon. The colon absorbs most of the water from the remaining digested material. Semisolid waste feces are created.

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DIGESTIVE SYSTEM ROOT WORDS

an/o	anus	abdomin/o	abdominal
append/o	appendix	chole	gall or bile
col/o	colon	cyst/o	bladder
doch/o	duct	duoden/o	duodenum
enter/o	intestine	esophag/o	esophagus
gastr/o	stomach	hepat/o	liver
herni/o	hernia	ile/o	ileum
jejun/o	jejunem	lapar/o	laparotomy
lith/o	stone		

ABSCESS	localized collection of pus
ANOREXIA	without appetitite
APPENDECTOMY	surgical removal of the appendix
APHAGIA	inablility to swallow
BULIMIA	eating disorder characterized by bouts of overeating followed by induced vomiting, diarrhea, and fasting
CACHEXIA	state of severe malnutrition, wasting
CHOLECYSTITIS	inflammation of the gallbladder
CHOLELITHIASIS	gallstones
CIRRHOSIS	inflammation of the tissue of an organ; usually associated with the liver
COLECTOMY	surgical removal of all or part of the colon
COLIC	spasm in any hollow organ or tube, such as the stomach, intestines or bile duct
COLITIS	inflammation of the colon
CONSTIPATION	buildup of fecal material in the large intestine that is not easily passed in the rectum
DIARRHEA	frequent loose or watery bowel movements
DIVERTICULUM	sac or pouch in the walls of a canal or organ
DYSPHAGIA	difficulty in swallowing
EMESIS	vomiting
ENTERITIS	inflammation of the intestine

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ESOPHAGEAL VARICES	varicose veins in the esophagus
GASTRIC ULCER	open sore or lesion in the mucous membrane of the stomach
GUAIAC TEST	done on feces to determine if occult (hidden) blood is present
HEMORRHOIDS	varicose veins in the anorectum
HEPATOMEGALY	enlarged liver
HIATUS (HIATAL) HERNIA	protusion of the stomach upward into the mediastinal cavity through an abnormal opening in the diaphragm
ICTERUS JAUNDICE	characterized by yellowish color of the skin, whites of eyes, body fluids, and mucous membranes due to excessive bilirubin in the blood
ILEITIS	inflammation of the third and longest part of the small intestine
MELENA	black, tarry stools due to the action of digestive process on the blood present in the intestine
OVA & PARASITES	a common test of the fecal material to rule out the presence of eggs and worms
STOMA	opening established in abdominal wall by colostomy
STOMATITIS	inflammation of the mouth
ULCERATIVE COLITIS	inflammation of the colon with the formation of ulcers in the mucous membrane of the colon
ABDOMINOCENTESIS	puncturing of the abdomen with an instrument for the purpose of withdrawing fluid
ABDOMINAL SONOGRAM	Ultrasound of the abdomen including the liver, gallbladder, pancreas
BARIUM ENEMA	X-ray of the colon following administration of an enema of barium, which acts as a contrast medium
CHOLANGIOGRAM	x-ray of the bile ducts
COLONSCOPE	endoscope used to examine the colon
COLONOSCOPY	endoscopic examination of the colon
COLOSTOMY	procedure creating a new opening in the colon
ENDOSCOPE	device that consists of a tube and a viewing apparatus used to observe the inside of a hollow organ or cavity

ENDOSCOPIC RETROGRADE CHOLANGIO-PANCREATOGRAPHY (ERCP) - endoscopic examination of the duodenum and bile and pancreatic ducts	
ENEMA	introduction of fluid into the rectum and colon
GALLBLADDER SERIES	x-ray of the gallbladder. Tablets of dye are swallowed the day before the x-ray is performed
GASTROINTESTINAL SERIES (GI SERIES)	x-ray of the stomach and small intestine following a drink of barium.
ILEOSTOMY	the creation of a new opening into the illeum (last portion of the small intestine)
LAPAROSCOPY	endoscopic examination of the abdomen
LIVER AND SPLEEN SCANS	performed in the nuclear medicine department with the injection of a radioisotope. Used to detect tumors and other problems.
PROCTOSCOPY	endoscopic examination of the rectum
SIALOGRAM	x-ray of the salivary ducts following an injection of dye into the salivary glands
SIGMOIDOSCOPY	endoscopic examination of the end of the colon
UPPER GI SERIES	x-ray of the espophagus,stomach, and duodenum following a drink of barium
URETEROSTOMY	opening into one of the ureters

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EXCRETORY SYSTEM

The excretory system is also called the Urinary System.The system consists of two kidneys, two ureters, a urethra and an urinary bladder. They remove extra water, salts, and other wastes, which leave your body as urine.

The kidneys are located in the upper abdomen, behind the abdominal organs. Millions of nephrons are located in the kidney. They serve as a filter in the formation of urine. We can lose large amounts of nephrons and still live normally.

The kidney has the ability to reabsorb nutrients and minerals that are needed by the body. Other substances, not needed such as drugs, some vitamins, excessive fluids are not reabsorbed. They combine with excess water and create urine.

The ureters are tubes that carry urine from each kidney and empty into the bladder. Special stretch-receptor nerve cells become stimulated when the bladder is full. A message is sent to the brain which results in emptying of the bladder (urination or micturition).

The urethra is a tube that leads from the bladder to the outside of the body. The urethra in the male is about eight inches long because it runs through the penis. It is about 1 1/2 inches long in the female.

The rectum expels the fecal material. Liquid waste is produced by the kidneys and is collected in the bladder.

The kidneys have three important functions:

1. Excrete nitrogenous waste products and mineral salts.
2. Help maintain the amount of water in the tissues at a constant level despite the varying amounts of fluid taken into the body.
3. Maintain appropriate levels of acids and bases in the body.

EXCRETORY SYSTEM ROOT WORDS

cyst/o	bladder
lith/o	stone
nephr/o	kidney
pyel/o	pelvis
ur/o	urine
urethr/o	urethra
glycos/o	glucose
meat/o	meatus
prostat/o	prostate
ren/o	kidney
ureter/o	ureter
vas/o	vessel

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ANURIA	failure of the kidneys to secrete urine
CYSTOCELE	protrusion of the bladder into the anterior vaginal wall
DEHYDRATION	condition of fluid output being greater than fluid input
DYSURIA	difficult or painful urination
EDEMA	excessive fluid retained in body
ENURESIS	incontinence or bedwetting
GLYCOSURIA	glucose (sugar) in the urine
NEPHROLITHIASIS	kidney stones
NOCTURIA	night time urination
RENAL COLIC	spasm in the bladder or ureter accompanying the passage of a stone
RENAL FAILURE	failure of the kidney to secrete urine
RENAL INSUFFICIENCY	failure of the kidney to secrete sufficient urine
RESIDUAL URINE	urine remaining in the bladder after urination
RETENTION OF URINE	inability to empty the bladder
UREMIA	toxic condition resulting from the inability of the kidneys to eliminate nitrogenous waste from the body
BENCE JONES PROTEIN	urine test to rule out the presence of an abnormal protein found in the urine of patients
BLOOD UREA NITROGEN (BUN)	blood test to determine the amount of nitrogenous waste in the blood
CYSTOGRAM	x-ray of the bladder using a dye
CYSTOSCOPY	examination of the bladder with a cystoscope
INTRAVENOUS PYELOGRAM (IVP)	x-ray of the urinary tract using a dye as a contrast medium
URINALYSIS	physical, chemical, and microscopic examination of the urine

ENDOCRINE SYSTEM

The word hormone is from a Latin term meaning "to arouse or set in motion". The endocrine system secretes hormones. The endocrine glands consist of:

PITUITARY GLAND	regulates metabolism. The hormones secreted by the pituitary gland affect other glands, stimulating them to secrete their hormones. This gland is often called the "master gland".
THYROID GLAND	produces hormones that regulate growth and the metabolic rate and are responsible for the individual's energy level.
PARATHYROID GLAND	two pairs of small glands located on each side of the thyroid gland. Works with the thyroid gland in regulating the amount of calcium and phosphorous in the body.
THYMUS GLAND	believed to play a role in the immune system of the body. The exact function is not understood.
PANCREAS	large gland located below and behind the liver and stomach. It secretes insulin and glycogen.
ADRENAL GLANDS	located at the top of each kidney. Important in the metabolism of proteins, fat, and carbohydrates. They are also active in maintaining fluid and electrolyte balance. Hormones are also produced to help the body react to stress.
OVARIES	female sex glands that secrete estrogen and progesterone. These two hormones are essential in the reproductive processes and also influence a women's feminine physical characteristics.
TESTES	male sex glands, secrete a hormone called testosterone. This hormone is necessary for the development of the male secondary sex characteristics and maintenance of the reproductive organs.

Endocrine glands are ductless. They empty directly into the bloodstream. This makes the secretions immediately available to cells in all parts of the body.

Exocrine glands do not empty directly into the bloodstream. These consist of the salivary glands, sweat glands, mammary glands, and bulbo-urethral glands. There are also exocrine glands associated with digestion.

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ENDOCRINE SYSTEM ROOT WORDS

acr/o	extremity	aden/o	gland
adren/o	adrenal	gluc/og	glucose
glyc/o	glycogen	kal/o	potassium
natr/o	sodium	thyr/o	thyroid
toxic/o	toxic		

ACIDOSIS	disturbance in the acid-base balance of the body due to accumulation of acids or excessive loss of bicarbonates
ALKALOSIS	disturbance in the acid-base balance of the body due to accumulation of alkalies or excessive loss of acids
CRETINISM	lack of physical and mental development due to congenital deficiency of the thyroid hormone
DIABETES MELLITUS	caused by inadequate secretion and utilization of insulin, resulting in increased blood glucose and loss of glucose in the urine
GLYCOSURIA	presence of glucose in the urine
HIRSUTISM	excessive growth or presence of hair
HYPERGLYCEMIA	excessive glucose in the blood
HYPERKALEMIA	excessive potassium in the blood
KETOSIS	accumulation of ketones, the end product of fat metabolism in the body
OBESITY	abnormal amount of fat on the body; exogenous obesity is caused by excessive caloric intake; endogenous obesity is caused by faulty metabolism
POLYDIPSIA	excessive thirst

REPRODUCTIVE SYSTEM

The female reproductive system consists of two ovaries, two fallopian tubes, a uterus, and a vagina. Externally,it includes the vulva and breasts (mammary glands). The main function of the ovary is to produce ova (eggs). The ovaries produce a hormone called estrogen.

Ovulation occurs monthly. An egg is released into the fallopian tube where it may or not be fertilized before it moves to the uterus. The estrogen released during ovulation causes a buildup in the lining of the uterus. Menstruation starts if pregnancy does not occur.

The male reproductive system consists of the testes, scrotum, penis, seminal vesicle, and prostate gland. The primary reproductive organs are the testes. The testes produce sperm. The testicles are in a sac called the scrotum. The hormone, testosterone influences sexual activity and reproduction.

REPRODUCTIVE SYSTEM ROOT WORDS

amnion	amniotic sac	cervic/o	cervix
colp/o	vagina	gravid/o	pregnant
gynec/o	woman	hyster/o	uterus
mamm/o	breast	mast/o	breast
men/o	menses	metro/o	uterus
oophor/o	ovary	orchi/o	testicle
para	to give birth	proct/o	rectum
salping/o	fallopian tubes	uter/o	uterus
vas	vessel		

ABORTION	termination of pregnancy before the fetus is viable
AMENORRHEA	absence of monthly flow
ANTEPARTUM	before birth
BENIGN PROSTATIC HYPERTROPHY (BPH)	non-cancerous enlargement of the prostate gland
COLPOSCOPE	instrument used to examine the vagina
CONGENITAL	present at birth
ECTOPIC PREGNANCY	implantation of the fertilized ovum outside the uterus, in the fallopian tube, on the ovary or in the abdominal cavity
ENDOMETRIUM	lining of the uterus
EMBRYO	developing child in utero from the second to eighth week inclusive following fertilization

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FETUS	developing child in utero from third month to birth
GESTATION	period of development of child in utero from conception to birth
GRAVIDA	a pregnant woman
IMPOTENCE	loss of sexual function
LABOR	the process leading to the expulsion of the fetus from the uterus
LEUKORRHEA	white or yellowish vaginal discharge
MENOPAUSE	period marking permanent cessation of menstrual period
MISCARRIAGE	spontaneous abortion
NATAL	pertaining to birth
NOCTURIA	need to get up at night to urinate
NULLIGRAVIDA	a woman who has never been pregnant
NULLIPARA	a woman who has never borne children
PERINEUM	in the female, the area between the vulva and the anus
POSTPARTUM	after birth

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GENETICS

Genetics, the science of heredity, involves studying the structure and function of genes which are responsible for species and individual traits. Gene flow refers to the movement of genes from one population to another and is a natural occurrence. Gene mutation refers to genetic material that has been altered at the fetal stage of development.

The differences between organisms are the result of the differences in the genes they carry. Changes may take place as a form of evolutionary process, recognized by Gregor Mendel in the 1860's. Recently, from the 1990's until today, changes in genetic material has been manipulated in the laboratory in hopes of eradicating genetic diseases and conditions.

Genetics is receiving increasing media attention, bringing to the public's attention the fact that many genetic diseases may be eradicated in the near future. Presentations on television, as well as newspaper and magazines, are good sources for self-education in this rapidly evolving field of knowledge.

Research in this field has led to the development of industries, called biotechnology or genetic engineering, totally dedicated to the diagnosis and treatment of certain genetic diseases such as Huntington's disease and Tay-Sachs disease. This is a very exciting time for researchers and the public, who may benefit in the future.

GENETIC TERMS

GENE	the biological unit that carries inheritable traits
GENETICISTS	scientists who study genetics
GENETIC COUNSELING	the evaluation and explanation of the risk prospective parents may have a child who has genetically traceable condition of the disease.
DNA	a molecule consisting of a doubled-strand, double-helical material. Considered the building block of heredity.
GENOME	the total amount of genetic material in a cell
CHROMOSOME	genetic material in the cell

GENETIC DISORDERS

Disease	Symptoms
Adult polycystic kidney disease	Kidney damage and failure
Alzheimers disease*	Progressive mental degeneration
Atherosclerosis*	Deposits of fatty substances line the inner layer of the arteries
Cancer*	Uncontrolled growth of cells
Cystic fibrosis	Chronic respiratory infection and digestive disorders
Down's syndrome	Mental retardation
Duchenne muscular	Muscular degeneration and weakness dystrophy
Dyslexia *	A disturbance in the ability to read
Hemophilia	Uncontrolled bleeding
Huntington's disease	Progressive mental and neurological degeneration
Hypertension*	High blood pressure that results in increased risk of stroke
Phenylketonuria (PKU)	Mental deficiency
Retinoblastoma	Cancer of the eye
Schizophrenia*	A psychotic disorder in which a person loses touch with reality
Sickle-cell anemia	Impaired circulation, anemia, pain
Type 1 diabetes*	Inadequate secretion or use of insulin

* Heredity may account for only a fraction of these cases.

METRIC SYSTEM

Hospitals use the metric system all of the time. It is a measuring system based on the number 10. The French invented it in the 1670's. All of the countries, except the United States use this system of measurement. We are the only country that uses feet, gallons, pounds, etc to measure.

The basic unit of measurement is the meter. A meter is slightly larger than a yard. The word meter appears in all units of length. A few examples are centimeter, millimeter, and kilometer.

The basic unit of volume is the liter. A liter is slightly more than a quart. Whenever the word liter appears it is always referring to volume. Another way of expressing volume is in cubic measurement.

The basic unit of weight is the gram. A gram is about the same weight as one paper clip, or one bean. A kilogram is 2.2 pounds. Whenever the word gram appears it is always referring to weight.

Temperature is measured on the Celsius scale. It was named after the man who invented it. The Celsius thermometer is sometimes called the centigrade thermometer.

Again, we need to learn prefixes to help us with the metric system. Symbols are used for abbreviations. Periods are not used after the symbol.

Meter	m
Liter	L (The capital L is used to avoid confusion with the number 1).
Gram	g

PREFIXES

1000 units	0.1 unit
k kilo	d deci
100 units	0.01 unit
h hecto	c centi
10 units	0.001 unit
da deka	m milli
1 unit	
m, L, g	

MEASURING LENGTH

m is for meter
cm is for centimeter
cm is less than a meter
km is for kilometer
km is more than a meter

MEASURING WEIGHT

g is for gram
mg is for milligram
mg is less than a gram
kg is for kilogram
kg is more than a gram

MEASURING LIQUIDS

L is for liter
cl is for centiliter
cl is less than a liter
ml is for milliter
ml is less than a centiliter

MEASURING TEMPERATURE

C is for celsius or centigrade

METRIC - ENGLISH CONVERSIONS

1 inch = 2.5 centimeters (cm)
The centimeter is the smaller unit.

1 meter (m) = 39.4 inches
The inch is the smaller unit

1 kilogram (kg) = 2.2 pounds
The pound is the smaller unit

METRIC-ENGLISH CONVERSION FORMULAS

CONVERT BETWEEN UNITS USING THE CONVERSION FACTOR. MULTIPLY TO CHANGE TO A SMALLER UNIT AND DIVIDE TO CHANGE TO A LARGER UNIT.

Convert 154 pounds to kilograms
1 kg = 2.2 lb
The conversion factor is 2.2
The conversion is to a larger unit. Divide by the conversion factor.

154 - 2.2 = 70 kg

.....

Convert 22 inches to centimeters
1 in = 2.5 cm
The conversion factor is 2.5

The conversion is to a smaller unit. Multiply by the conversion factor.
22 x 2.5 = 55
22 in = 55 cm

CONVERSIONS FROM CELSIUS TO FAHRENHEIT

Multiply 1.8 times degrees Celsius
Add 32
Result is degrees Fahrenheit
F = 1.8 C + 32

Convert 37 C (normal body temperature) to Fahrenheit
F = 1.8 C + 32
1.8 (37) + 32
66.6 + 32
98.6 F

CONVERSIONS FROM FAHRENHEIT TO CELSIUS

Subtract 32 from Fahrenheit degrees
Divide by 1.8
The result is degrees Celsius
C = F-32

$$\frac{}{1.8}$$

Convert 32 F (freezing point of water) to degrees Celsius
C = 32-32 = 0 = 0 C

$$\frac{}{1.8} \quad \frac{}{1.8}$$

In the metric system, the numbers are expressed in decimals. A space is left between the number and the symbol. Fractional parts of a unit a written with a zero in the units place to show clearly that there are no wholes.

0.5 mL
1 mL
1.5 mL

Digits are separated in groups of three, counting from the decimal point left and the decimal point right. Commas are not used in the metric system.

85 423.167 4 not 85,423.1674
7 125.75 not 7,125.75

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COMMON MEDICAL ABBREVIATIONS

AA	Alcoholics Anonymous
AAA	Abdominal aortic aneurysm
A&0	Alert and oriented
A&P	Anterior and posterior
ABD	Abdomen
ABG	Arterial blood gas
ac	Before meals
AD	Right ear
ADA	American Diabetic Association
ADL	Activities of daily living
ad lib	As desired
AFB	Acid fast bacillus
AK	Above knee
AKA	Above knee amputation
Alb	Albumin
Alk	Alkaline
ALK. Phos	Alkaline phosphatase
ALS	Amyotrophic lateral sclerosis
AMA	Against medical advice
amb	Ambulate
amp	ampule
ANA	Antinuclear antibody
ant	Anterior
AP&Lat	Anterior, posterior, and lateral
A&P	Auscultation and percussion
ARDS	Adult respiratory distress syndrome
ARF	Acute renal failure
AS	Left ear
ASA	Aspirin
ASAP	As soon as possible
ASCVD	Arteriosclerotic cardiovascular disease
as tol	As tolerated
AU	Both ears
aux	Auxiliary
AX	Axillary
BE	Barium enema
bid	Twice per day
bld	Blood
BM	Bowel movement
bilat	Bilateral
BKA	Below knee amputation
BP	Blood pressure
BPH	Benign prostatic hypertrophy
BR	Bedrest
BRP	Bathroom privileges
BS	Bowel sounds
BSC	Bedside commode
BUN	Blood urea nitrogen
BX	Biopsy

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c	With
C	Centigrade
Ca	Cancer or calcium
CAD	Coronary artery disease
CABG	Coronary artery bypass graft
cal	Calories
CAT	Computerized axial tomography
CBC	Complete blood count
CBR	Complete bed rest
cc	Cubic centimeter
CC	Chief complaint
CF	Cystic Fibrosis
CHF	Congestive heart failure
CHI	Closed head injury
Chol	Cholestrol
CLL	Chronic Lymphocytic Leukemia
cm	Centimeter
CNS	Central nervous system
C/O	Complaints of
COPD	Chronic obstructive pulmonary disease
CP	Cerebral Palsy
CPR	Cardio - pulmonary resuscitation
CPT	Chest physiotherapy
CRF	Chronic renal failure
CVA	Cerebrovascular accident (stroke)
CVP	Central venous pressure
Cx	Cervix
CXR	Chest x-ray
cysto	Cystoscopy
D&C	Dilation and curettage
D/C	Discontinue
Detox	Detoxicate
Diff	Differential Count
Dig	Digoxin , digitalis
DJD	Degenerative joint disease
DKA	Diabetic Ketoacidosis
DM	Diabetes Mellitus
DOA	Dead on arrival
DOB	Date of birth
DOE	Dyspnea on exertion
DPT	Diphtheria toxoid,, pertussis vaccine, tetanus toxoid
DRG	Diagnosis related groups
DSD	Dry sterile dressing
dsg	Dressing
DT's	Delirium Tremens
DUB	Dysfunctional uterine bleeding
DVT	Deep vein thrombosis
DX	Diagnosis
EBL	Estimated blood loss
E&C	Evacuation and curettage
EDC	Estimated date of confinement

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EEG	Electroencephalogram
EENT	Eye, ear, nose and throat
EGA	Estimated gestational age
EGD	Esophagogastroduodenscopy
EKG	Electrocardiogram
EMG	Electromyogram
ENT	Ear, nose and throat
EMT	Emergency medical technician
EOC	Enema of choice
EOM	Extra ocular movement
eq	Equivalent
ERCP	Endoscopic retrograde cholangiopancreatogram
ESR	Erythrocyte sedimentation rate
ESRD	End stage renal disease
ETOH	Ethanol (alcohol)
ETT	Endotracheal tube
EUA	Examination under anesthesia
F	Farenheit
FB	Foreign body
FBS	Fasting blood sugar
FDIU	Fetal death in utero
Fe	Iron
FFP	Fresh frozen plasma
F.R.	Fluid restriction
F/U	Follow up
FUO	Fever of undetermined origin
FWB	Full weight bearing
Fx	Fracture
G.A.	General anesthesia
GB	Gallbladder
GI	Gastrointestinal
GLU	Glucose
gm	Gram
GP	General practitioner
GSW	Gunshot wound
GTT	Glucose tolerance test
gtts	Drops or (gt. drop)
GU	Genitounnary
Gyn	Gynecology
H/A	Headache
Hgb	Hemoglobin
HBP	High blood pressure
Hct	Hematocrit
HEENT	Head, ears, eyes, nose and throat
H&P	History and physical
H/O	History of
HOB	Head of bed
HR	Heart rate
hs	Bedtime (hour of sleep)
HTN	Hypertension
HVD	Hypertensive vascular disease

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Hx	History
I&D	Incision and drainage
I&O	Input and output
IBW	Ideal body weight
ID	Infectious disease
IDDM	Insulin Dependent Diabetes Mellitus
IFM	Internal fetal monitoring
IM	Intramuscular
IOP	Intraocular pressure
IPPB	Intermittent positive pressure breathing
IUD	Intrauterine device
IV	Intravenous
IVDA	Intravenous drug abuse
IVP	Intravenous pyelogram
JODM	Juvenile Onset Diabetes Mellitus
JRA	Juvenile Rheumatoid Arthritis
jt	Joint
K	Potassium
KCL	Potassium chloride
kg	Kilogram
KUB	Kidney, ureter, bladder
K.V.O.	Keep vein open
L1, L2 etc	First lumbar vertebra, second, etc
LA	Left atrium
LBB	Left bundle branch block
LBP	Lower back pain
LE	Lower extremity
LFT	Liver function test
LLE	Left lower extremity
LLL	Left lower lobe
LLQ	Left lower quadrant
L/m	Liters per minute
LMP	Last menstrual period
LOA	Leave of absence
LOC	Level of consciousness or Laxative of choice
LP	Lumbar puncture
LS	Lumbosacral
LTM	Long term memory
LUE	Left upper extremity
LUL	Left upper lobe
LUQ	Left upper quadrant
LV	Left ventricle
m	Meter
MAR	Medication administration record
mcg	Microgram
MDI	Metered dose inhaler
mg	Milligram
MH	Marital history
MI	Myocardial infarction
ml	Milliliter
MOM	Milk of Magnesia

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MRI	Magnetic resonance imaging
MRSA	Methicillin resistant S. Aureus
MS	Multiple Sclerosis
MSL	Midsternal line
MUGA	Multiple gaited acquisition scanning
MVA	Motor vehicle accident
MVI	Multivitamins
N/A	Not applicable
NAD	No acute distress
neg	Negative
NGT	Nasogastric tube
NIDDM	Non Insulin Dependent Diabetes Mellitus
NKA or NKDA	No known (drug) allergies
NPO	Nothing by mouth
NS	Normal saline
NSR	Normal sinus rhythm
NSSVD	Non-sterile spontaneous vaginal delivery
NWB	Non weight bearing
N&V	Nausea and vomiting
OBS	Organic brain syndrome
OD	Right eye or overdose
OM	Otitis Media
OOB	Out of bed
op	Operation
O&P	Ova and parasites
ORIF	Open reduction internal fixation
OS	Left eye
OT	Occupational therapy
OTC	Over the counter
OU	Both eyes
P&A	Percussion and auscultation
PAC	Premature atrial contraction
PAP	Papanicolaou Smear
p.c.	After meals
PCA	Patient controlled anesthesia
PDR	Physician's Desk Reference
Peep	Positive end expiratory pressure
PERRLA	Pupils equal, round, reactive to light and accommodation
PFT	Pulmonary function test
PID	Pelvic Inflammatory Disease
PKU	Phenylketonuria test
plt	Platelet
PMH	Past medical history
PO	By mouth
PPN	Peripheral parenteral nutrition
PRBC	Packed red blood cells
PRN	As needed
P.R.O.M.	Premature rupture of membranes
PROM	Passive range of motion
pt	Patient

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PT	Prothrombin time
P.T.	Physical therapy
PTT	Partial thromboplastin time
PUD	Peptic ulcer disease
PVC	Premature ventricular contraction
PVD	Peripheral vascular disease
PWB	Partial weight bearing
Q	Every
QD	Every day
QH	Every hour
QHS	Every bedtime
Q.I.D.	Four times per day
Q.O.D.	Every other day
QS	Every shift
R.A.	Rheumatoid Arthritis
RBBB	Right bundle branch block
RBC	Red blood cell
RDS	Respiratory distress syndrome
Rh	Rhesus blood factor (negative or positive)
RHD	Rheumatic heart disease
RLE	Right lower extremity
RLQ	Right lower quadrant
R/O	Rule out
ROM	Range of motion
ROS	Review of symptoms
RR	Recovery room or respiratory rate
RUL	Right upper lobe
RUQ	Right upper quadrant
Rx	Prescription
s	Without
S.B.E.	Subacute bacterial endocarditis
SBO	Small bowel obstruction
SC	Subcutaneous
SEP	Sensory evoked potential
SIDS	Sudden Infant Death Syndrome
Sig	Instructions
SL	Sublingual
SLE	Systemic Lupus Erythematosus
SMI	Sustained maximal inspiration
SOB	Shortness of breath
S/P	Status post
S&S	Signs and symptoms
SSE	Soap suds enema
STD	Sexually transmitted disease
STS	Serological test for Syphillis
SVD	Spontaneous vaginal delivery
T	Temperature
T1, T2 etc	1st thoracic vertebra, 2nd etc.
T&A	Tonsillectomy & Adenoidectomy
TAH	Total abdominal hysterectomy
TB	Tuberculosis

T&C	Type and crossmatch
TCDB	Turn, cough and deep breath
TENS	Transcutaneous electrical neuromuscular stimulation
TIA	Trans ischemic attack
TIBC	Total iron binding capacity
TID	Three times a day
TLC	Tender loving care; total lung capacity
TMJ	Temporomandibular joint
T.O.	Telephone order
TP	Total protein
TPN	Total parenteral nutrition
TPR	Temperature, pulse and respiration
TSH	Thyroid stimulating hormone
Trach	Tracheostomy
TURP	Transurethral resection of prostate
TV	Tidal volume
TVH	Total vaginal hysterectomy
TWE	Tap water enema
Tx	Treatment
U	Units
UA	Urinalysis
UE	Upper extremity
UGI	Upper gastrointestinal
ULQ	Upper left quadrant
UNK	Unknown
URI	Upper respiratory infection
USN	Ultrasonic nebulizer
UTI	Urinary tract infection
VA	Visual acuity
VD	Venereal disease
VE	Vaginal examination
VF	Visual fields
V-fib	Ventricular fibrillation
VO	Verbal order
VS	Vital signs
VT	Ventricular tachycardia
W	White
WBC	White blood count
W -D	Wet to dry
WDWN	Well developed and well nourished
wnl	Within normal limits
wt	weight
x	Times (multiples of)
y.o.	Year old

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COMMON MEDICAL SYMBOLS

Δ	CHANGE	c	WITH
↑	INCREASE	s	WITHOUT
↓	DECREASE	@	AT
>	GREATER THAN	♂	MALE
≥	GREATER THAN OR EQUAL TO	♀	FEMALE
<	LESS THAN	+	POSITIVE
≤	LESS THAN OR EQUAL TO	-	NEGATIVE
=	EQUAL	(R)	RIGHT
√	CHECK	(L)	LEFT

CHEMICAL SYMBOLS

NH_3	Ammonia
Mg	Magnesium
K	Potassium
Na	Sodium
CO_2	Carbon dioxide
ETOH	Alcohol
Ca	Calcium
$NaHCo_3$	Sodium bicarbonate
H_2O_2	Hydrogen peroxide
$P0_4$	Phosphate
SO_4	Sulfate
HCO_3	Bicarbonate
KCl	Potassium Chloride
O_2	Oxygen

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ADDITIONAL VOCABULARY

AUTOCLAVE	Apparatus using superheated steam under pressure for sterilizing
ACUTE	Illness which had a sudden beginning, a short course, and severe symptoms.
ADVANCED DIRECTIVES	Patient's pre-planned consent for what he wants done in the way of life saving measures.
AEROBIC	With oxygen.
AMBULATE	Able to walk about.
AMNIOCENTESIS	Taking a sample of amniotic fluid from sac during pregnancy to examine cells for genetic defects.
ATAXIA	Lack of muscle coordination.
ASCITES	Collection of fluid in the peritoneal cavity.
ADHESIONS	Abnormal bands or fibers that bind one organ to another (especially intestines); can result from surgery or infection.
ATTENDING PHYSICIAN	Primary care giver.
BENIGN	Noncancerous.
BIOPSY	Excision of living tissue for examination.
BRADYCARDIA	Slow heart beat.
BRUIT	Abnormal sound or murmur heard when listening to an artery or organ, or gland.
CALORIE	Energy value of food.
CATHETER	Soft plastic tube designed to introduce fluid into or remove fluid from a body space
CHRONIC	A long duration.
COMATOSE	In a deep stupor; cannot be aroused.
CONSENT	Permission granted by a person voluntarily and in his or her right mind.
CONSULTATION	A shared opinion regarding the diagnosis, treatment and prognosis of a patient.
CONTINENT	Capable of controlling voiding and defecation.

CORONARY ARTERY ARTERY BYPASS GRAFT (CABG)	Substituting a vein from the leg to bypass the occluded artery in MI patients.
CYSTOCELE	Hernia of the bladder.
DIAGNOSIS	A statement of the nature of an illness.
DIURESIS	Increased urinary output, due to medication with a diuretic drug.
EXACERBATION	Increase in the degree of sickness.
FIBROCYSTIC DISEASE	Non-malignant breast tumors.
FISTULA	Abnormal opening between two organs.
FLACCID	Poor muscle tone; limp.
GAIT	Manner of walking or moving on foot.
GENESIS	The origin or coming into being of something; birth; production. Originates from the Bible.
HERNIA	Rupture; or a projection of a part from its natural place
HICCOUGH	Spasm of the diaphragm due to many things
HOMEOSTASIS	The body's attempt to keep its internal environment stable and in balance
HYPERALIMENTATION	TPN (Total parenteral nutrition) with a subclavian catheter
INVASION OF PRIVACY	To make publicly known any private or personal information about a person without his or her consent.
INVASIVE	Diagnostic procedure that requires needles, IV's, or medications
JCAHO	Joint Commission of American Health Organizations
LETHARGY	marked lack of energy; stupor
LIBEL	Written defamation of character.
LUMEN	The opening within a tubal structure such as a blood vessel
MALIGNANT	Deadly; often refers to a tumor (ex. malignant tumor).
MALPRACTICE	Bad practice by a professional, which may involve carelessness, negligence, faulty practice, or illegal or immoral conduct.

NG TUBE	nasogastric tube: flexible tube inserted through the nose and into the stomach.
NONAEROBIC	Without oxygen.
NONINVASIVE	Diagnostic procedure that does not require inserting needles, tubes, and so on.
NOSOCOMIAL INFECTION	Infections caused by conditions within the health care facility.
OCCULT	Hidden or difficult to observe directly
PEAK & TROUGH LEVELS	When a patient is being treated with some types of antibiotics, a doctor may want to know how much of the antibiotic is circulating in the bloodstream at the highest (peak) and lowest (trough) levels.
PERITONEUM	Membrane lining the abdominal cavity.
PROGNOSIS	A prediction of the outcome of an illness.
REFLEX	Automatic response to stimulation.
SCAR	Mark left by the healing of a wound.
SEPSIS	A poisoned state caused by bacteria.
SEPTICEMIA	A morbid condition caused by the presence of bacteria and other toxins in the blood.
STERILE	Free from all microorganisms.
SINUSES	Air spaces in the cranium that make the skull lighter and serves as resonating chambers for the voice.
SPUTUM	Secretions from bronchi.
TACHYCARDIA	Fast heart rate.
THERAPEUTIC	Pertaining to or effective in the treatment of disease.
TOXIC	Poisonous.
TRACTION	Process of drawing or pulling.
TUMOR	A swelling or large nodule may be benign or malignant.
TRIAGE	A system of classifying the sick and wounded to determine priority of care.
VALVES	Heart valves keep the blood from backflowing.

VOID To empty bladder.

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Abbreviation Lists from:

St. Agnes Hospital, Baltimore, Md.

University of Maryland Medical System, Baltimore, Md.

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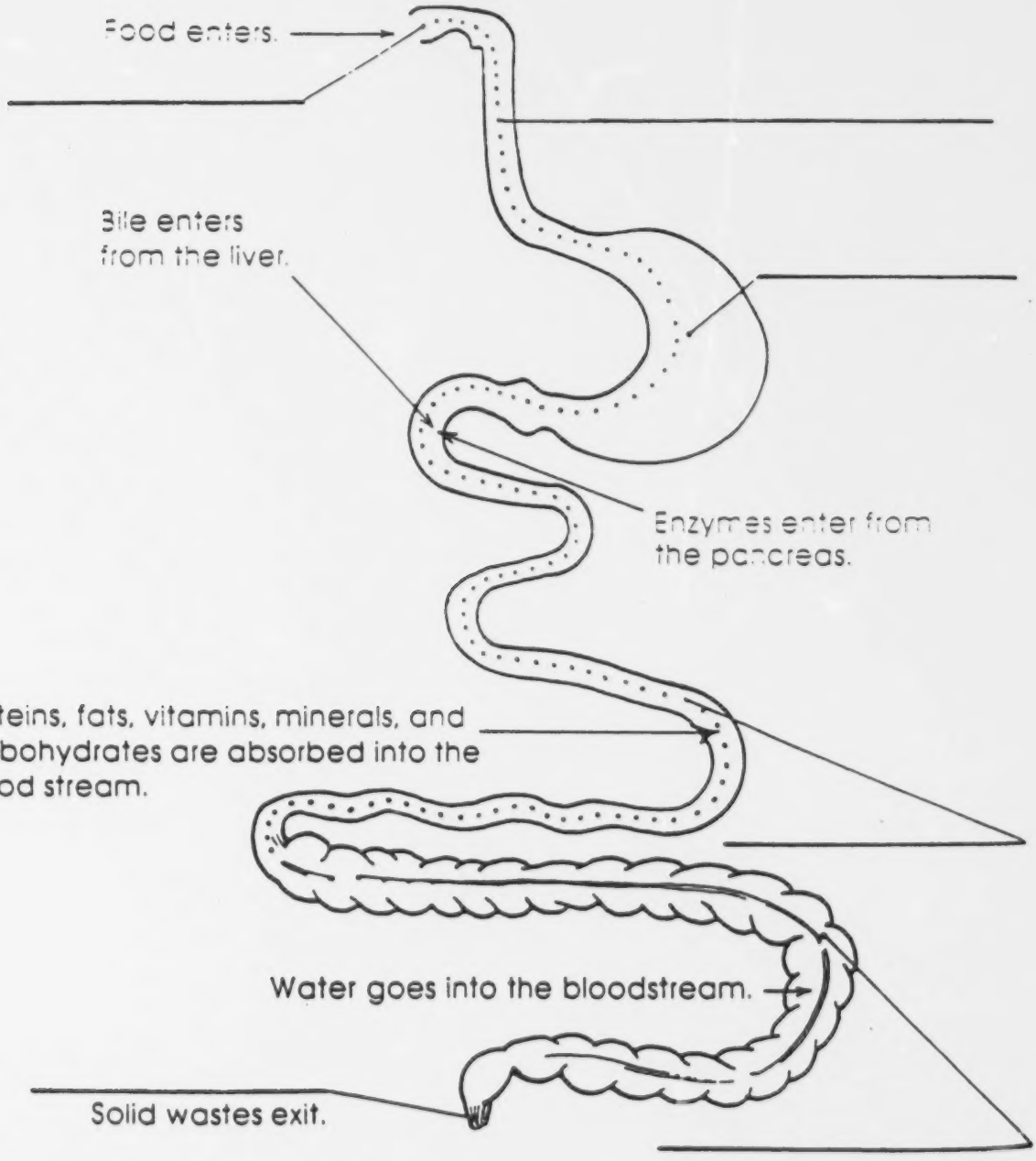
ALIMENTARY CANAL

Label the following parts: small intestine, anus, esophagus, large intestine, duodenum, mouth, stomach, liver, pancreas, gall bladder


Food enters.
Bile enters from the liver.
Enzymes enter from the pancreas.
Proteins, fats, vitamins, minerals, and carbohydrates are absorbed into the blood stream.
Water goes into the bloodstream.
Solid wastes exit.

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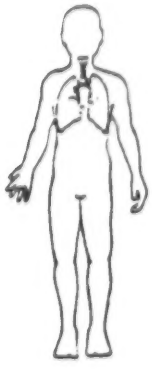
BODY SYSTEMS

Label the following body systems: skeletal, respiratory, nervous, muscular, circulatory, sensory, digestive, urinary, endocrine.

Movement Group

Centre Group

Energy Group



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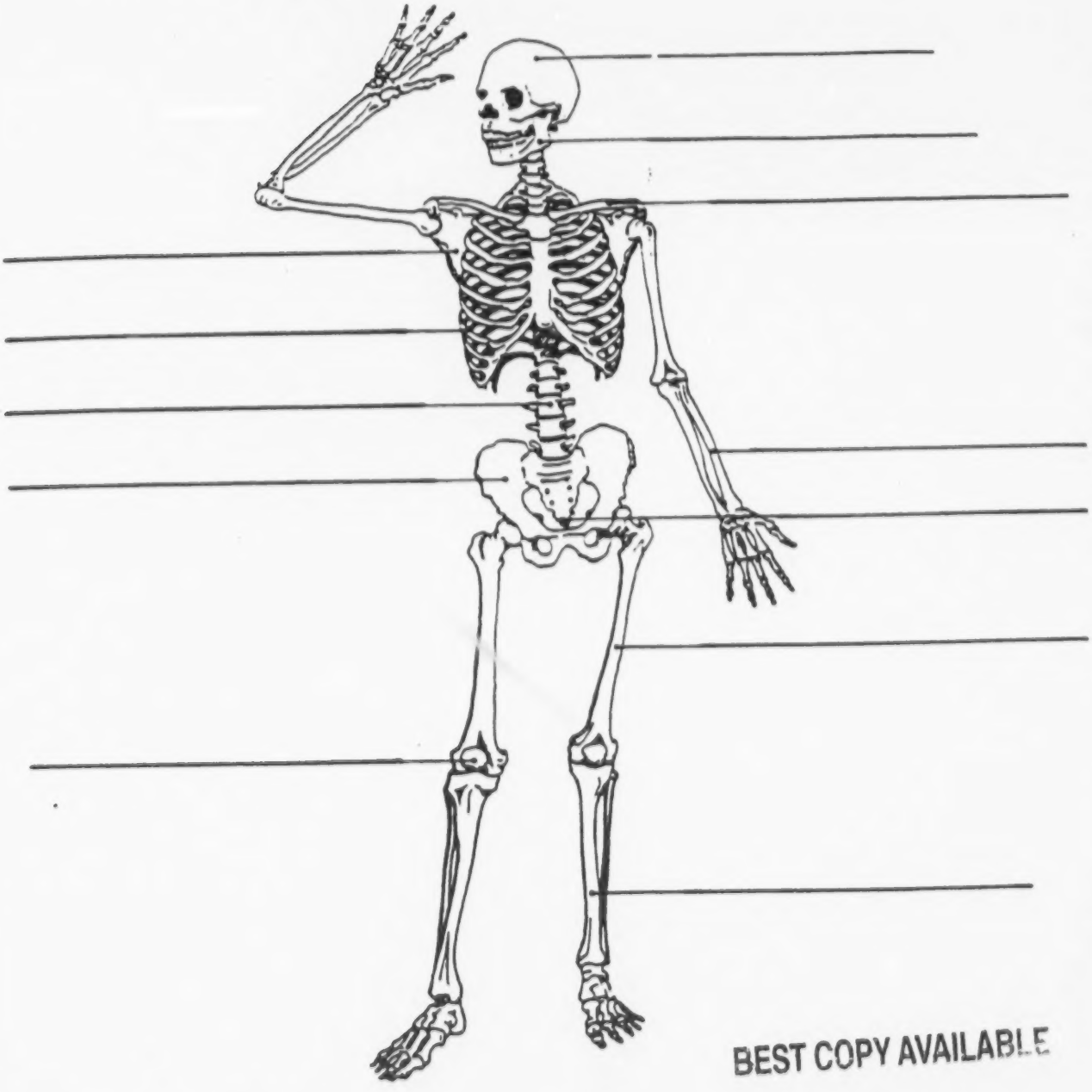
YOUR FRAMEWORK

Label the following parts: skull (cranium), tailbone (coccyx), kneecap (patella), hipbone (pelvis), jawbone (mandible), backbone (vertebrae), rib, shinbone (tibia), collarbone (clavicle), shoulderblade (scapula), thighbone (femur), lower arm bone (radius).



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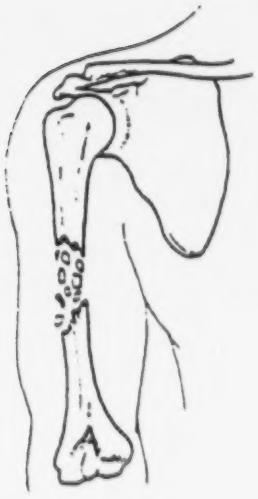
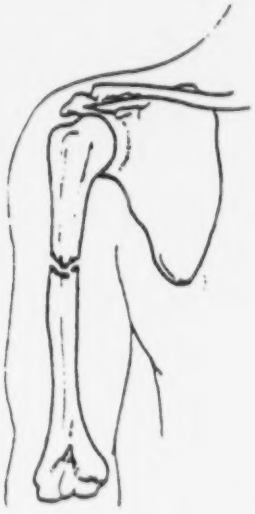
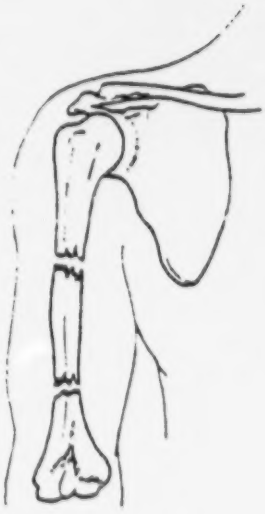
STICKS AND STONES MAY BREAK YOUR BONES

Label the following parts: closed fracture, greenstick fracture, open fracture, comminuted fracture, spiral fracture.

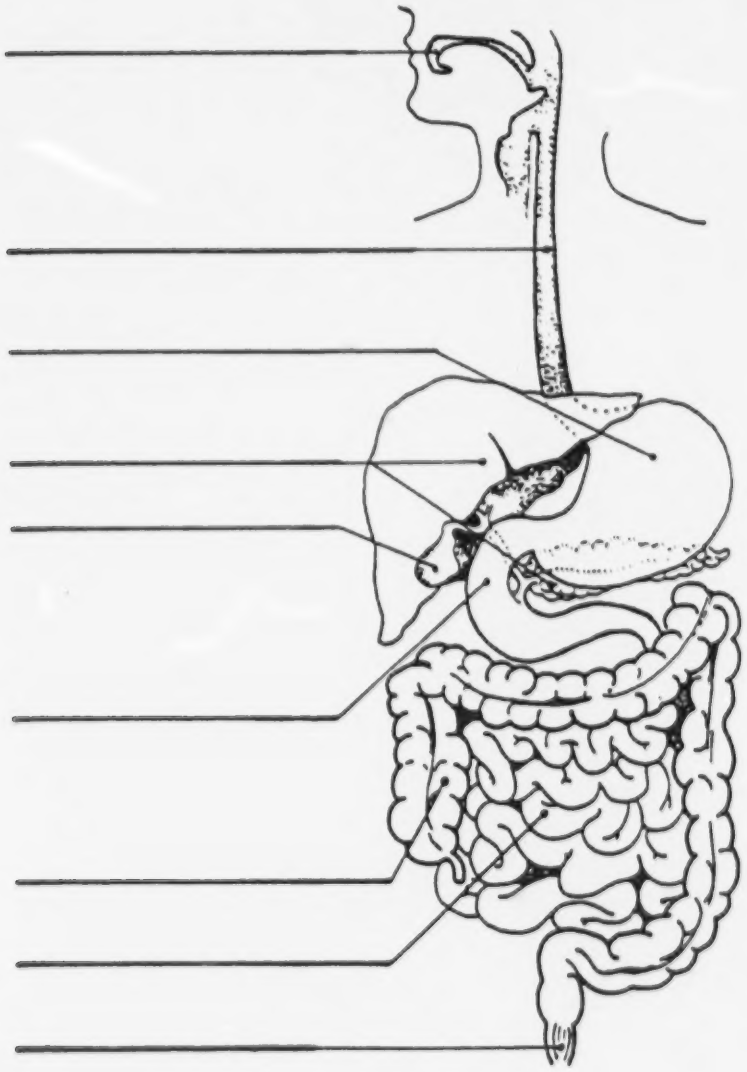






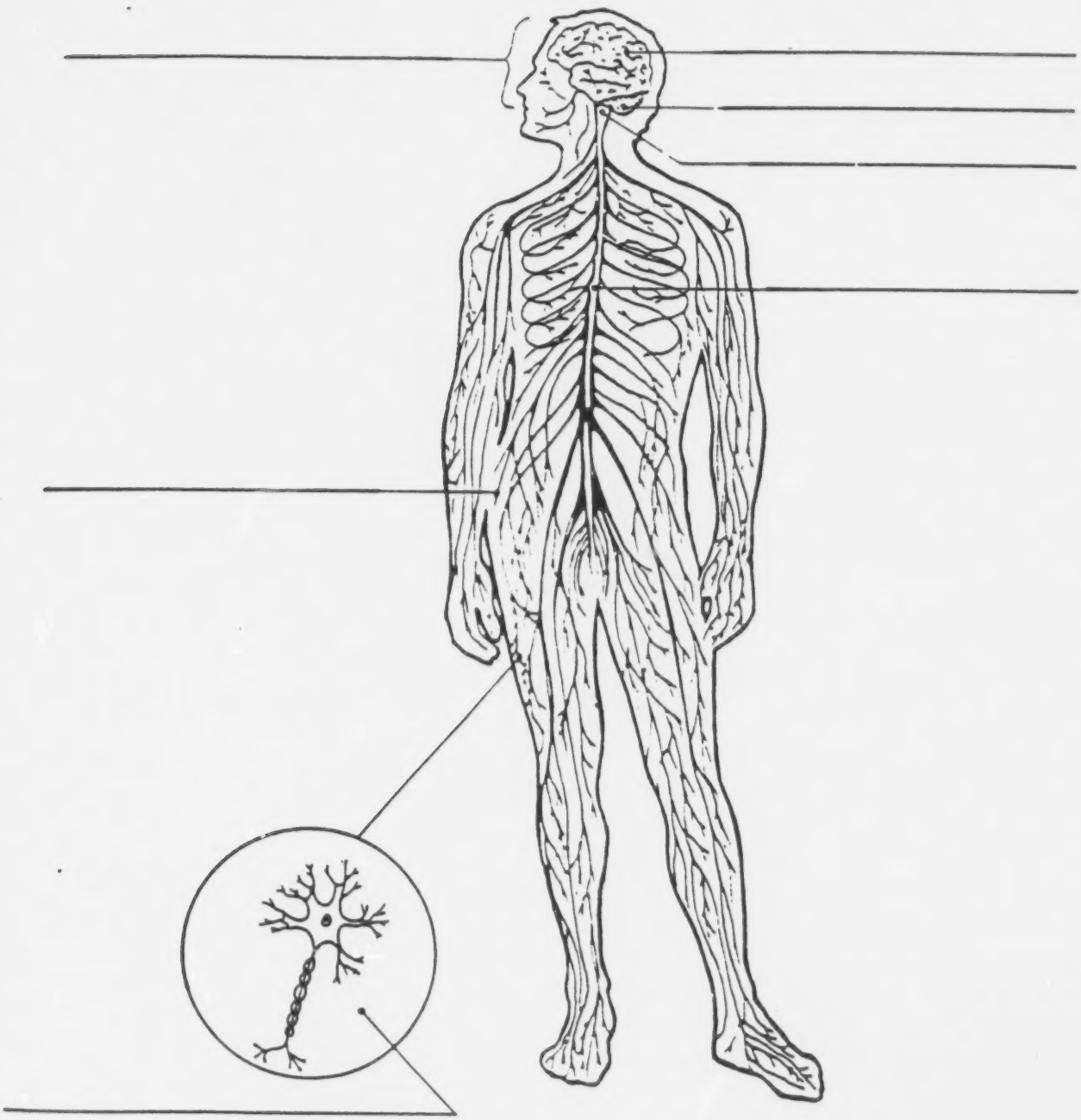
ALIMENTARY CANAL

Label the following parts: small intestine, anus, esophagus, large intestine, duodenum, mouth, stomach, liver, pancreas, gall bladder



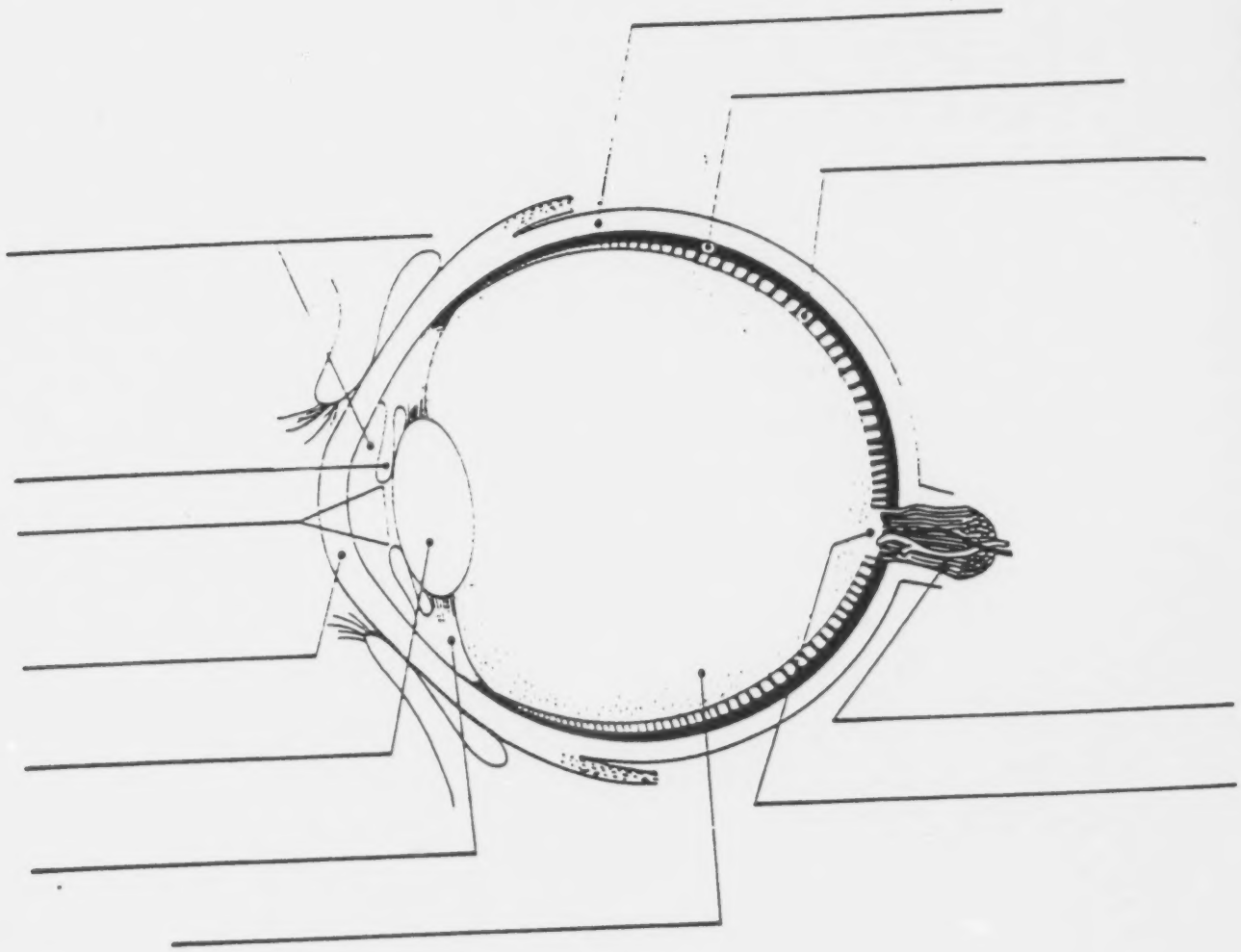
YOUR CENTRAL NERVOUS SYSTEM

Label the following parts: brain, cerebrum, nerve cell, spinal cord, cerebellum, nerves, brain stem.



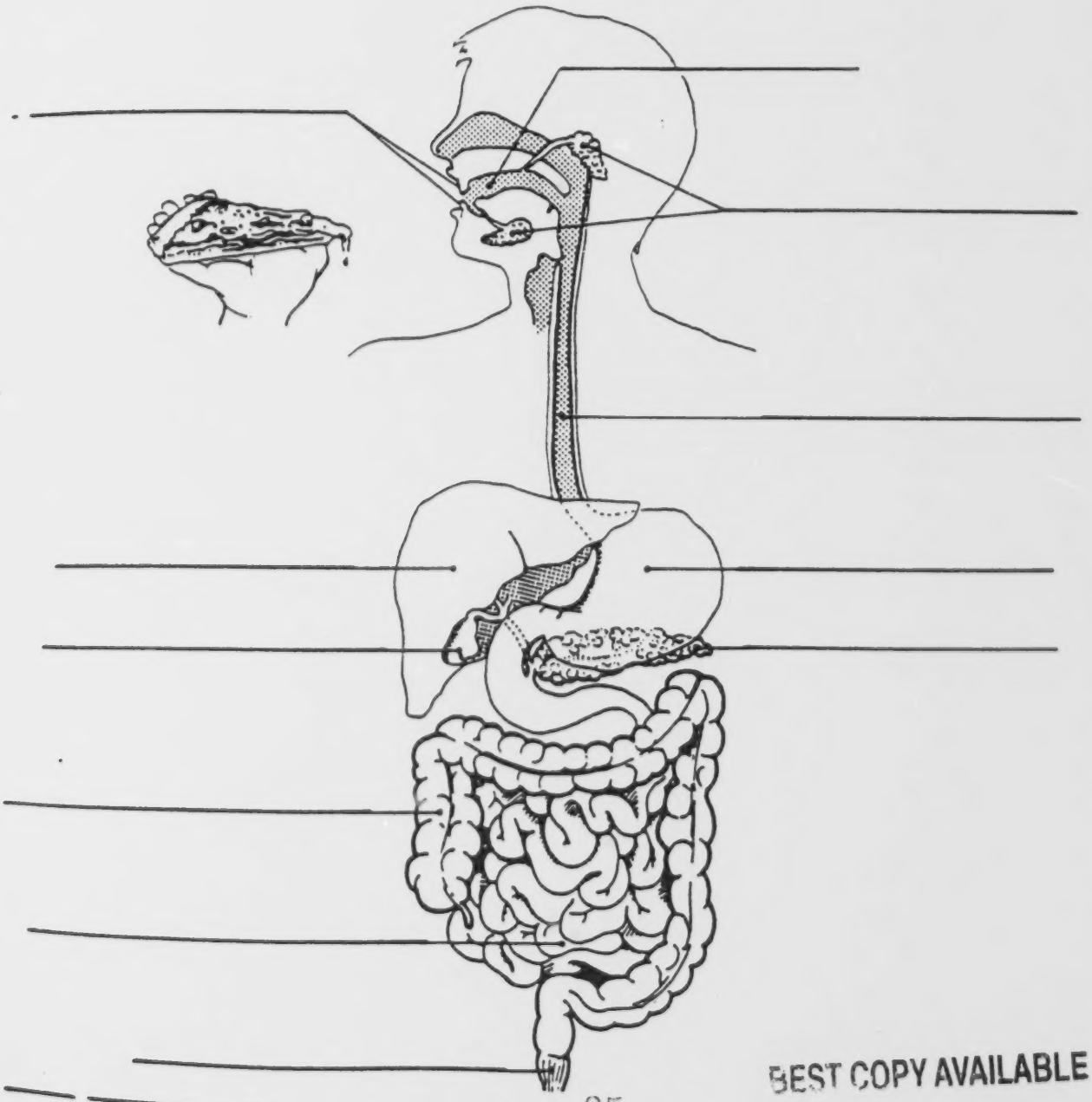
INSIDE YOUR EYE

Label the following parts: optic nerve, lens, cornea, blind spot, retina, iris, pupil, choroid, vitreous humor (clear jelly), ciliary muscles (lens controlling muscles), sclera, aqueous humor (watery fluid)



YOUR DIGESTIVE SYSTEM

Label the following parts: pancreas, stomach, esophagus, salivary glands, liver, mouth, teeth, anus, gall bladder, large intestine, small intestine.



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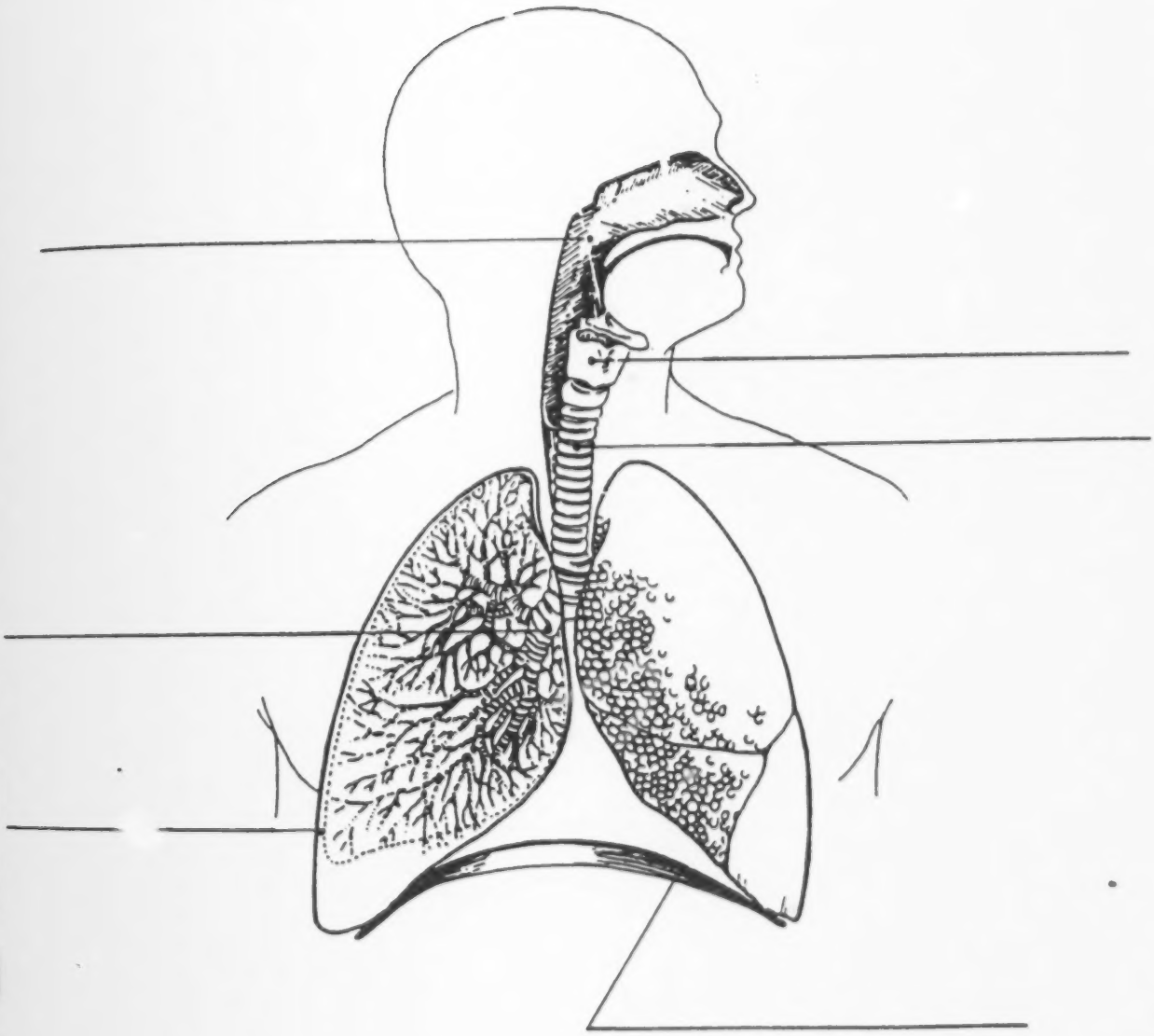
YOUR RESPIRATORY SYSTEM

Label the following parts: throat (pharynx), windpipe (trachea), bronchial tube, voice box (larynx), lung cover (pleura), diaphragm



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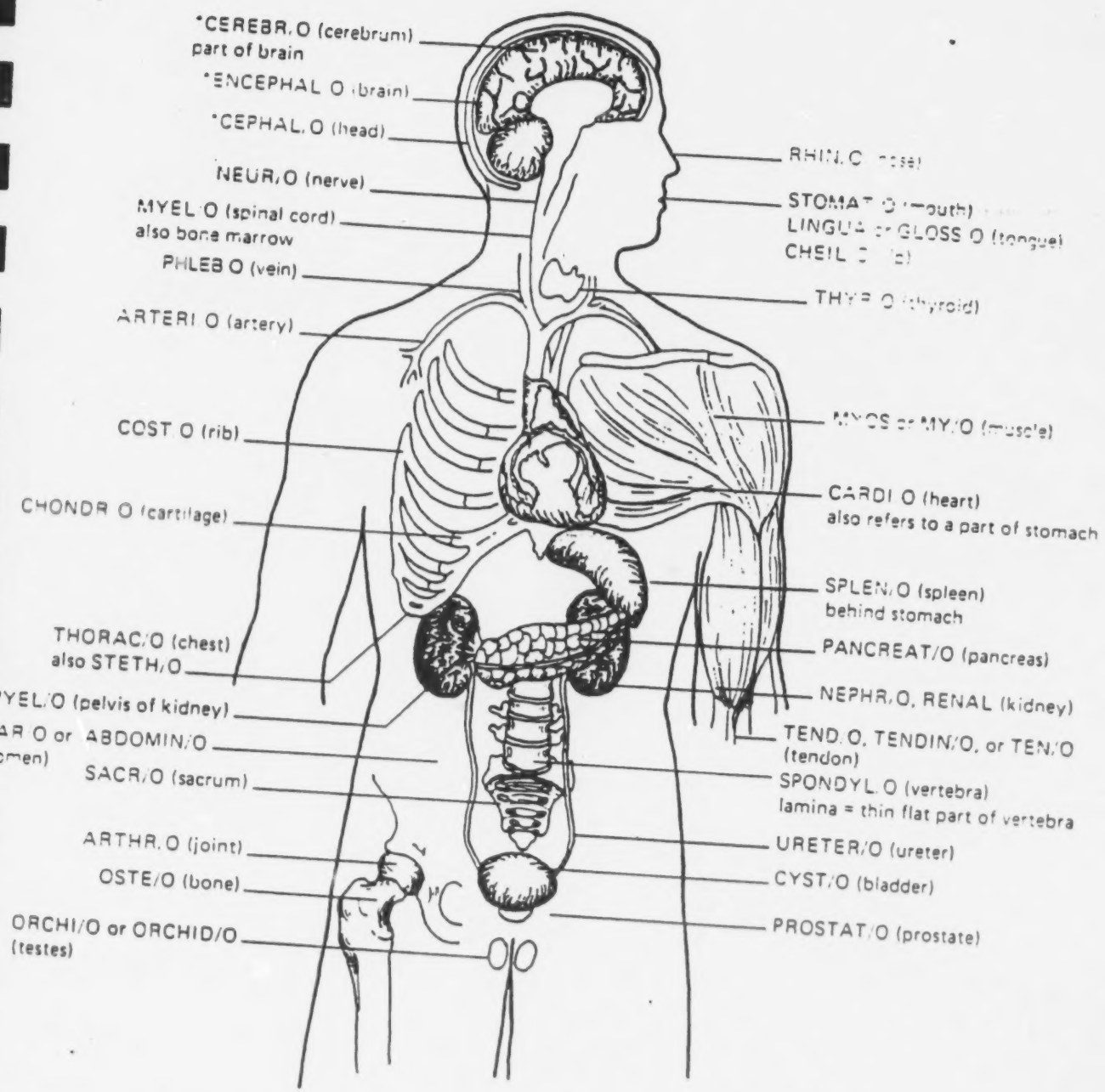

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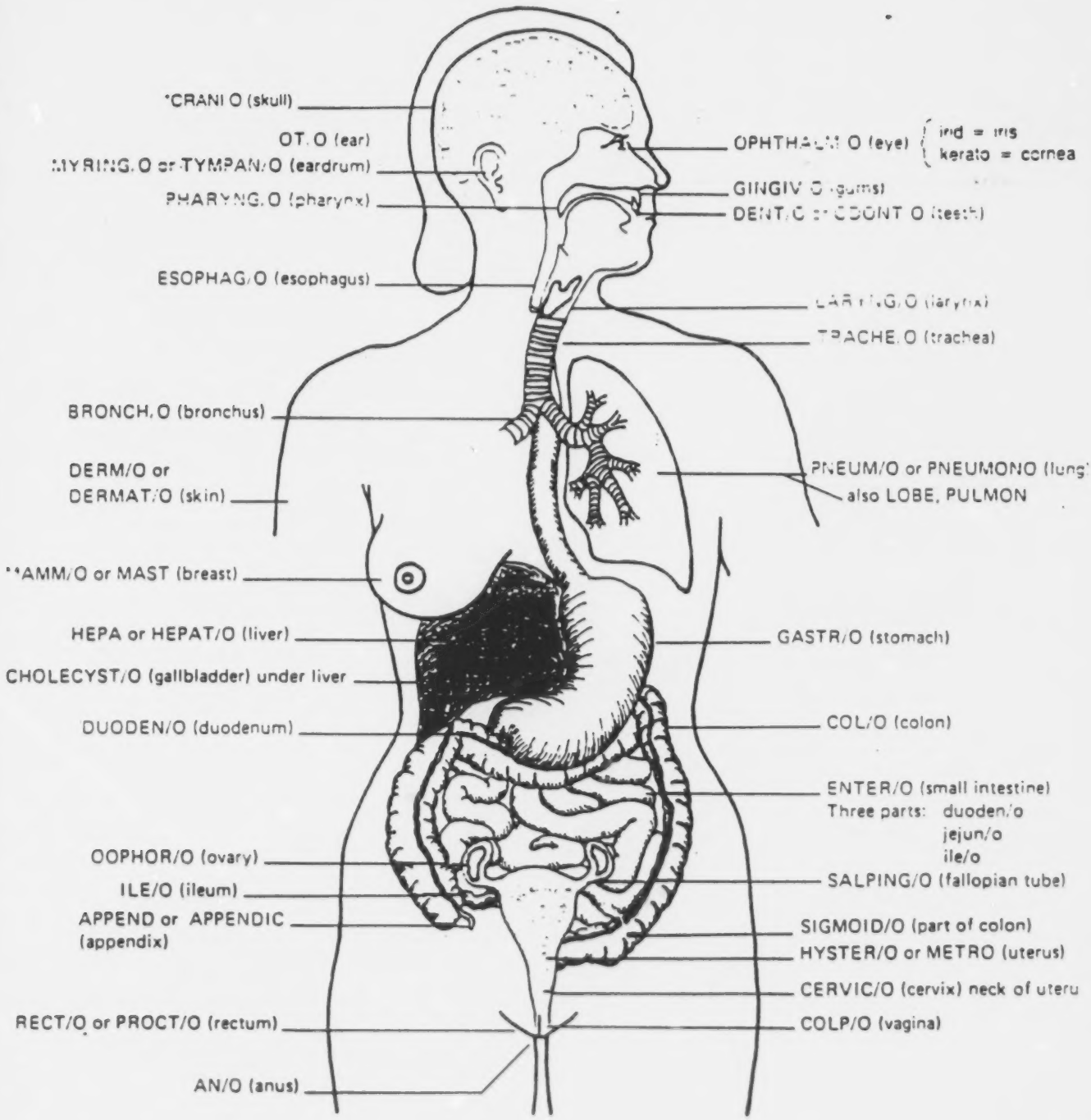

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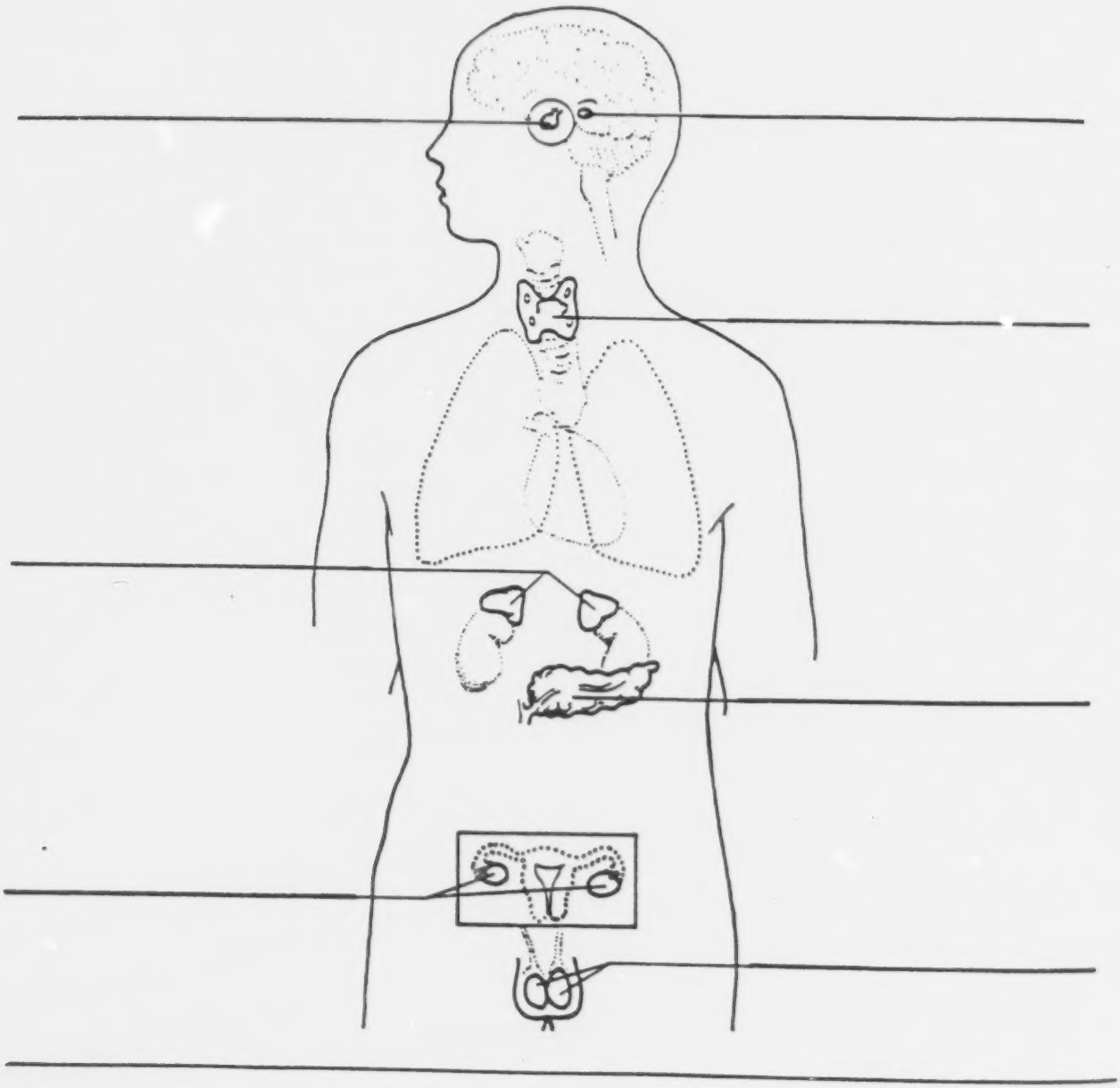
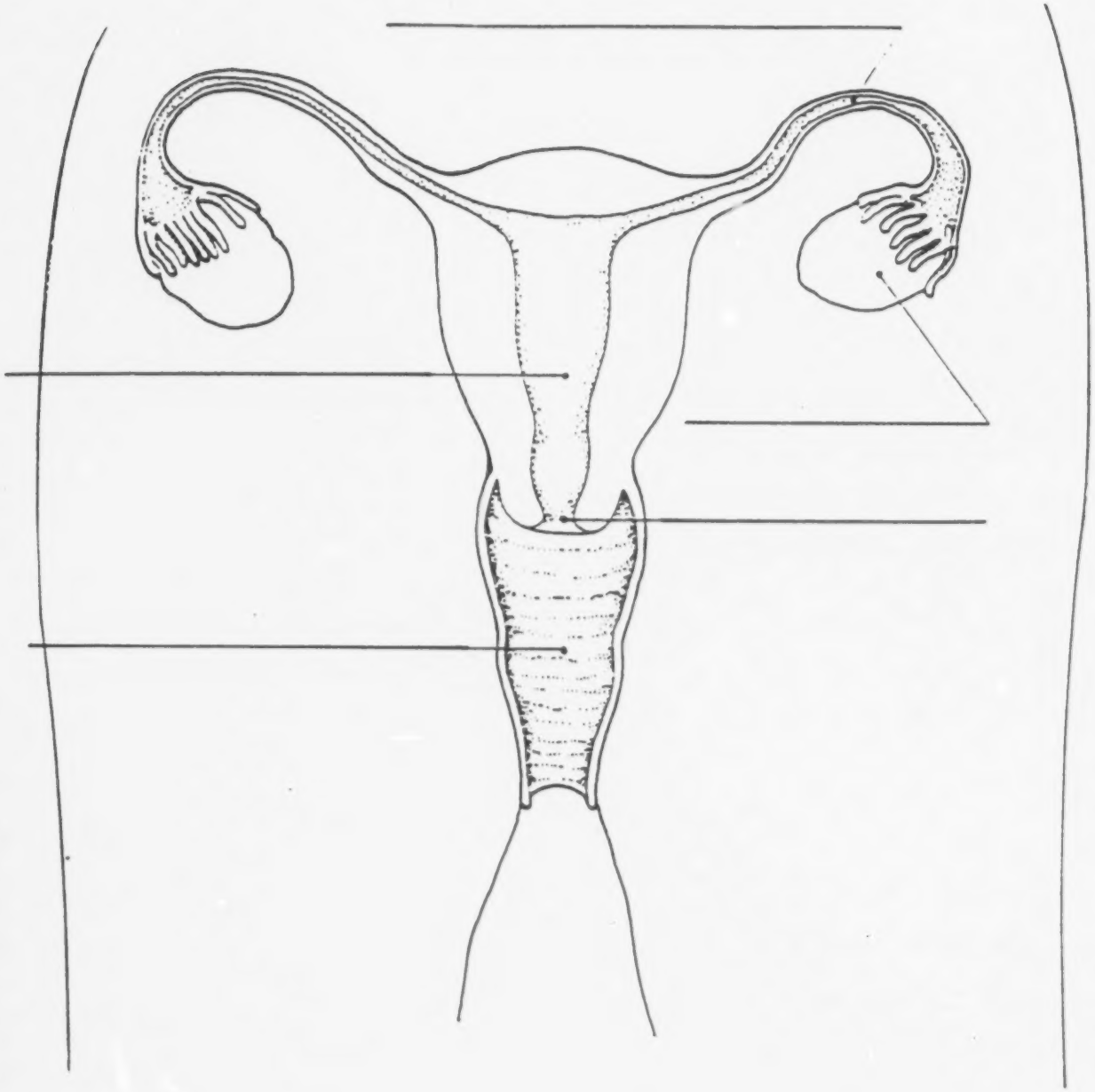
ENDOCRINE SYSTEM

Label the following parts: thyroid gland, pineal gland, adrenal glands, testes, pituitary gland, pancreas, ovaries



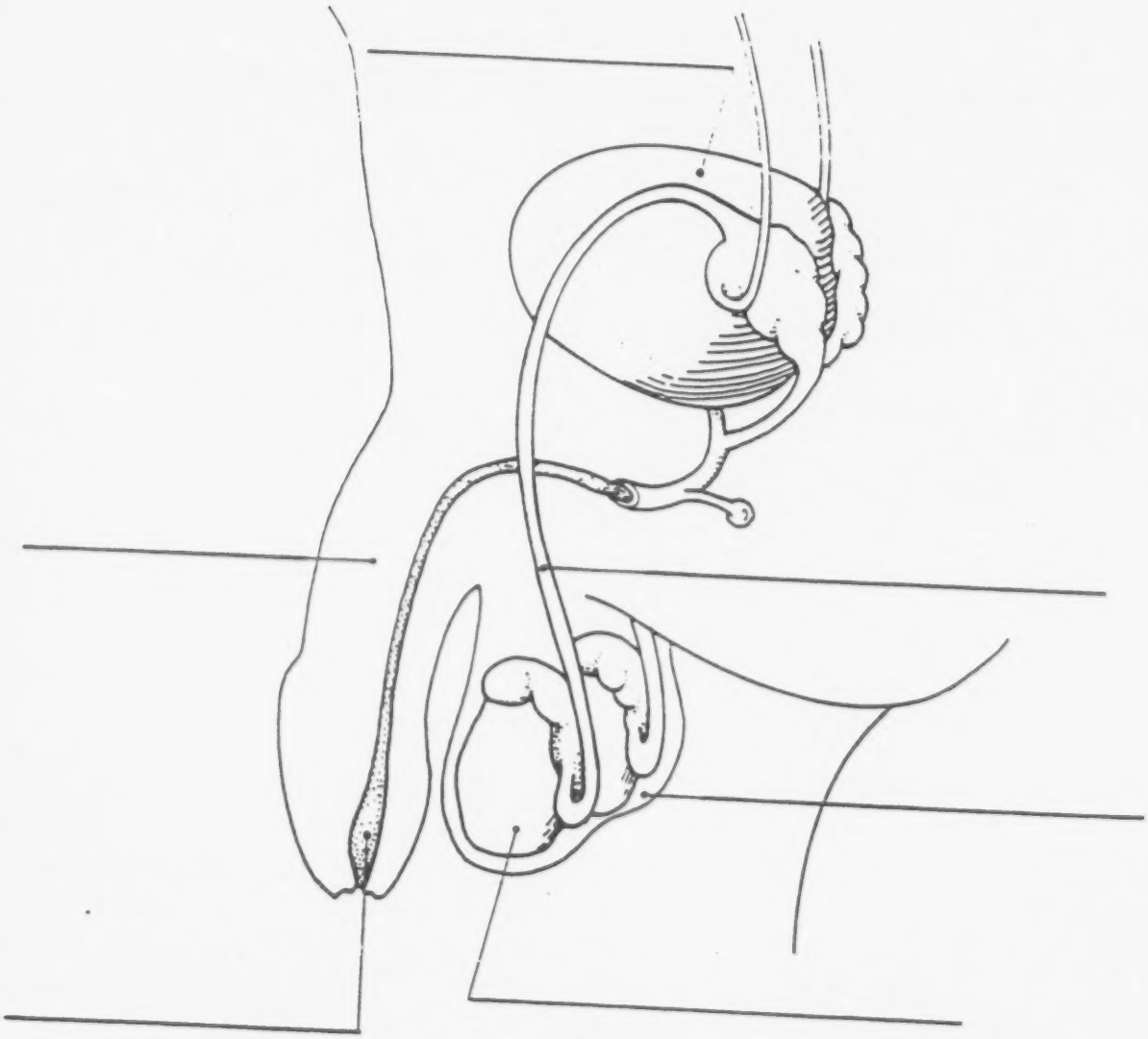
REPRODUCTIVE SYSTEM - FEMALE

Label the following parts: ovary, vagina uterus, cervix, Fallopian tube



REPRODUCTIVE SYSTEM - MALE

Label the following parts: testis, urethra, scrotum, sperm tube, penis, bladder.



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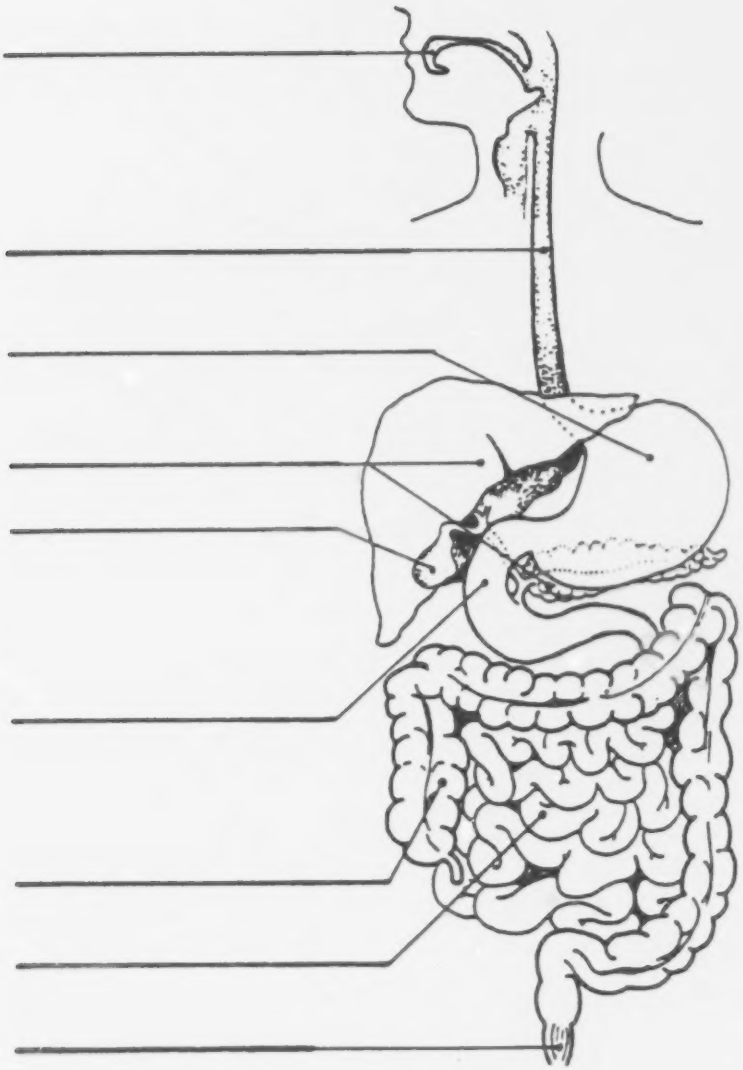

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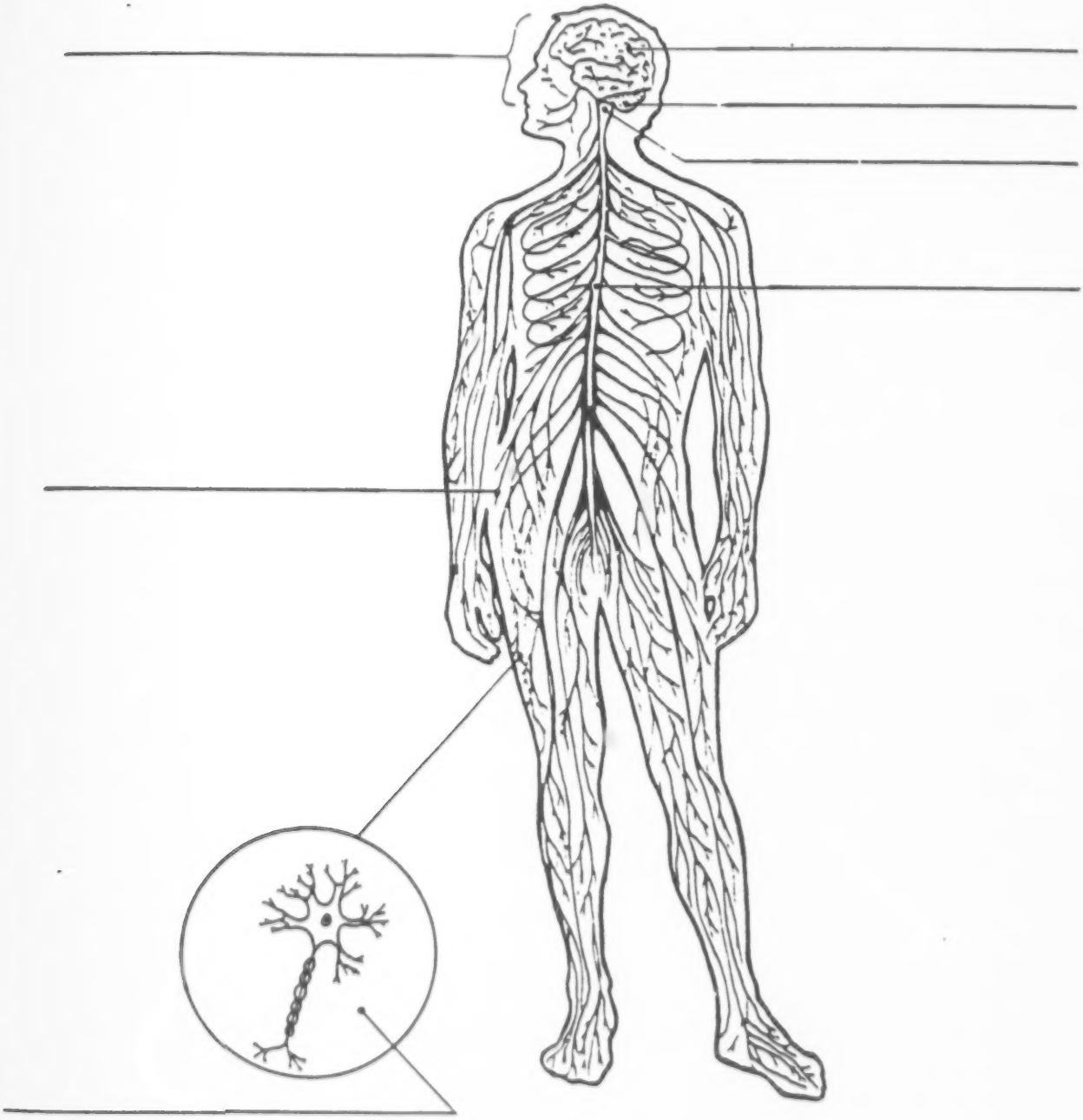

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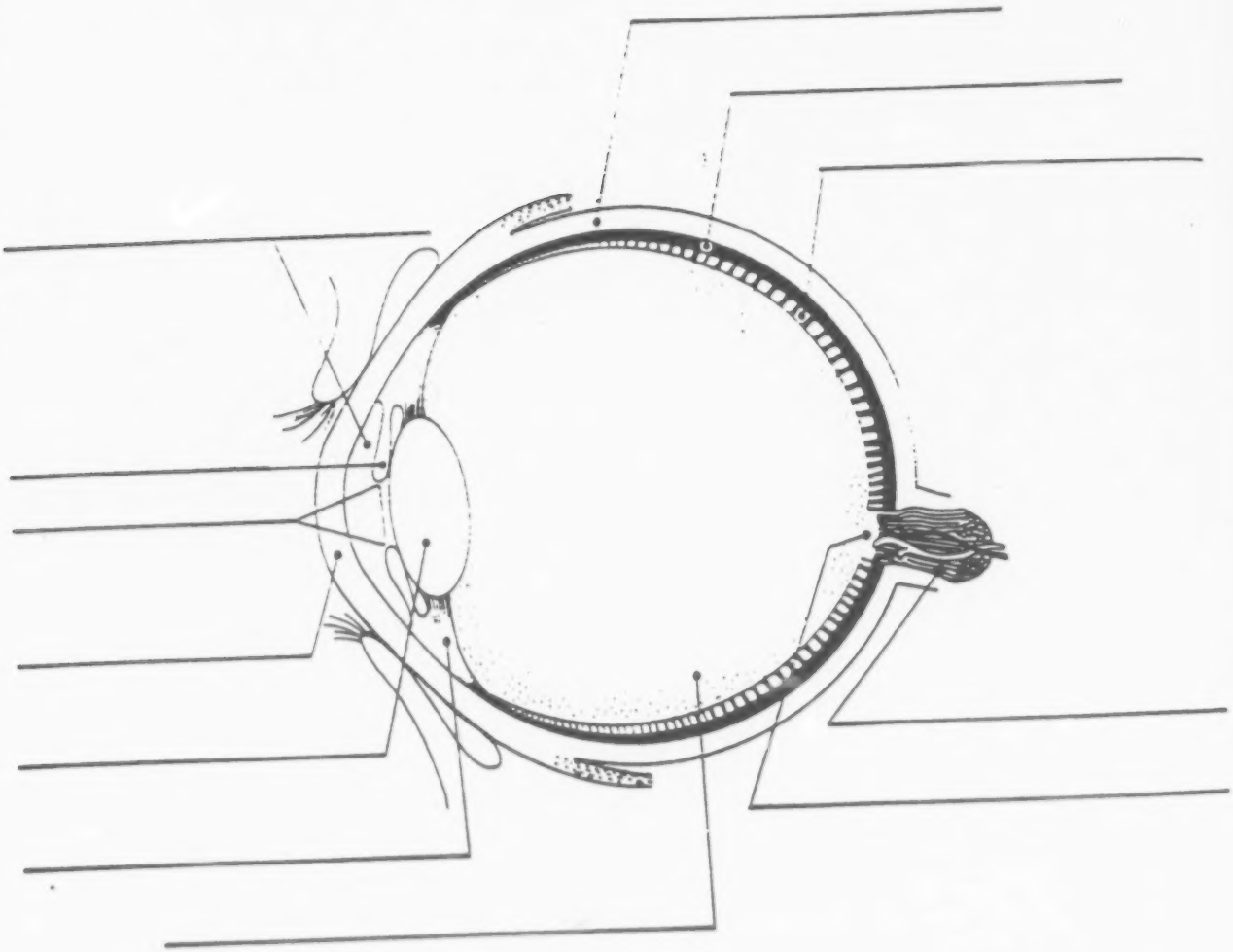

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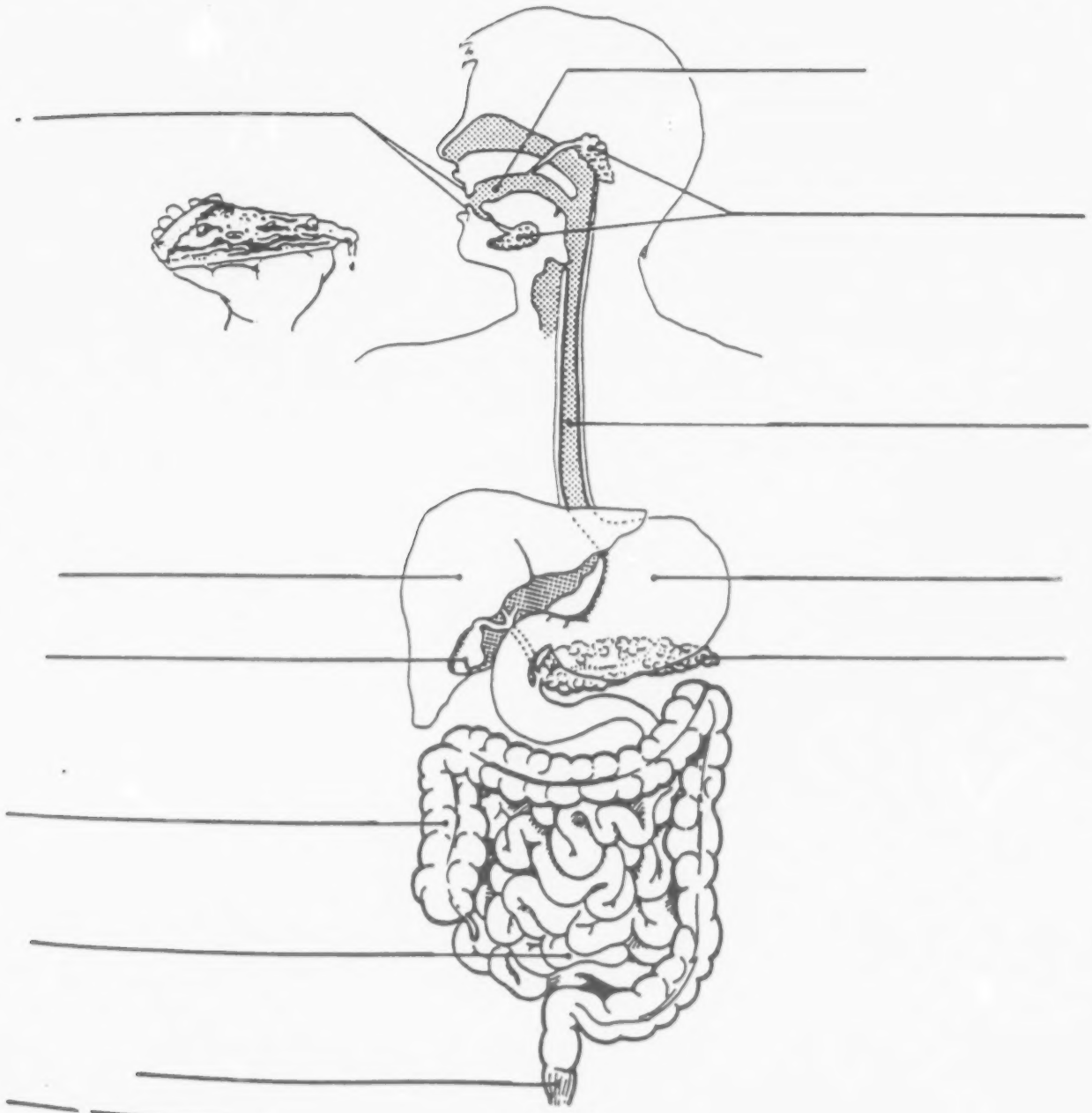

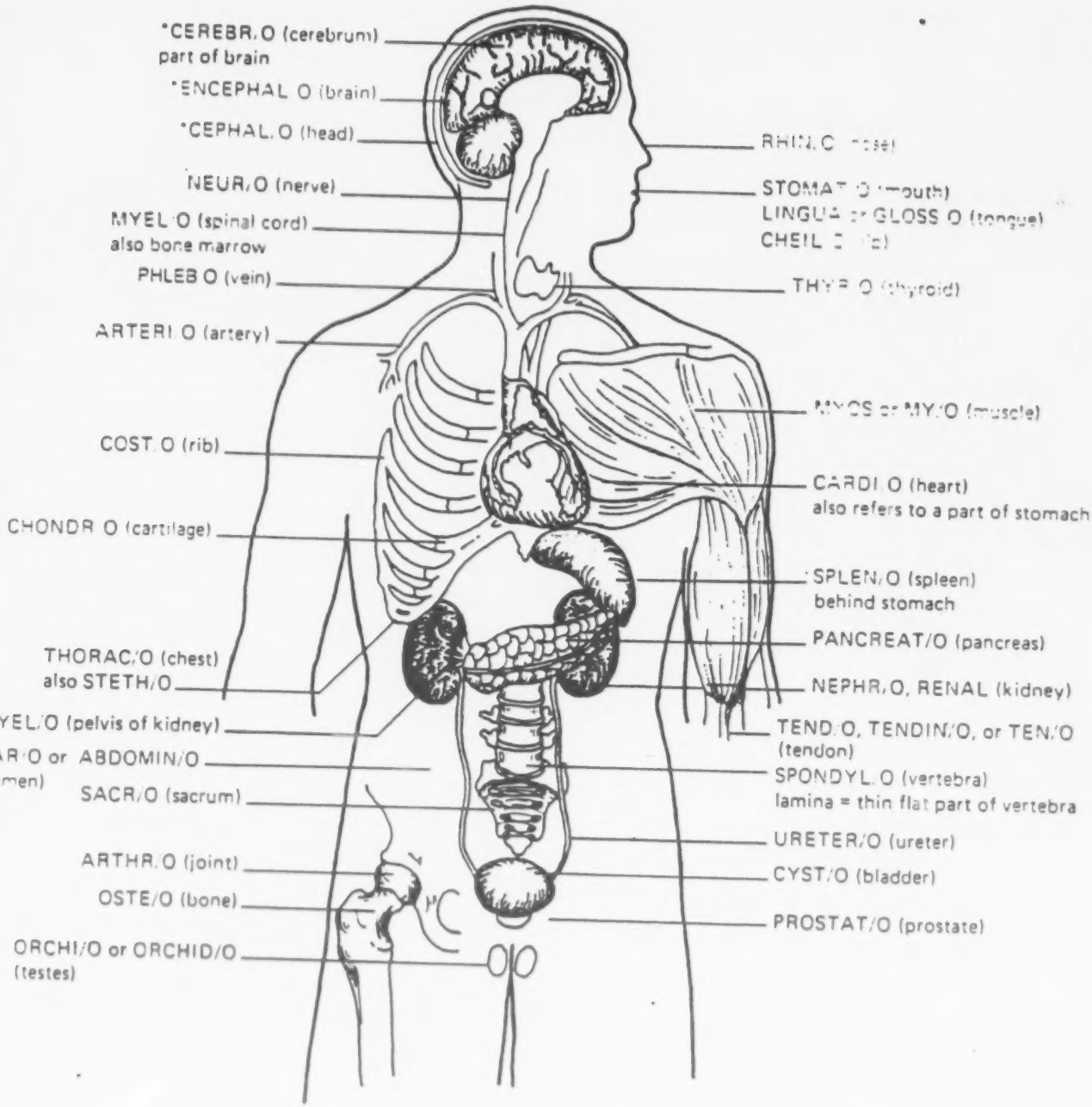

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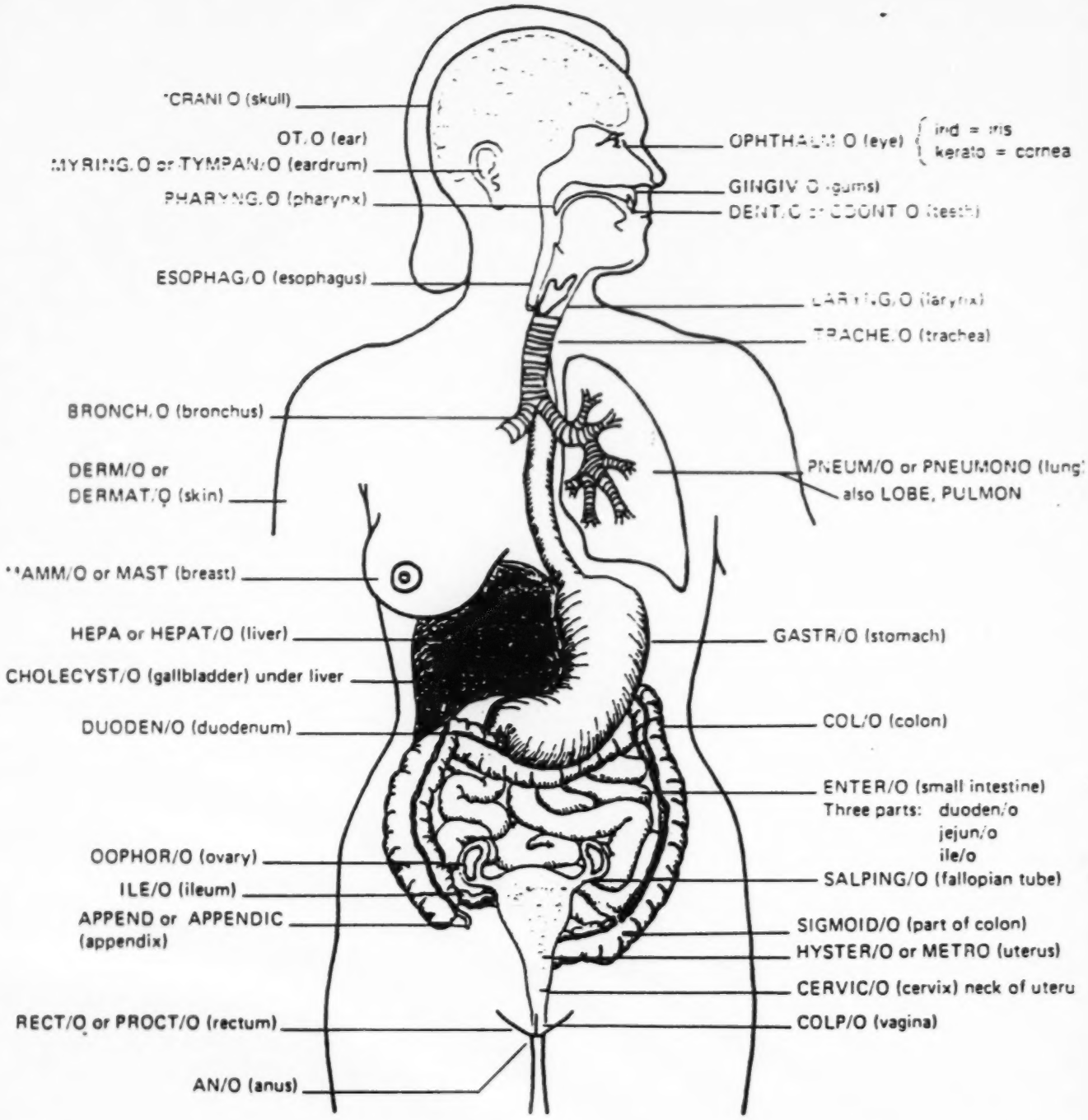

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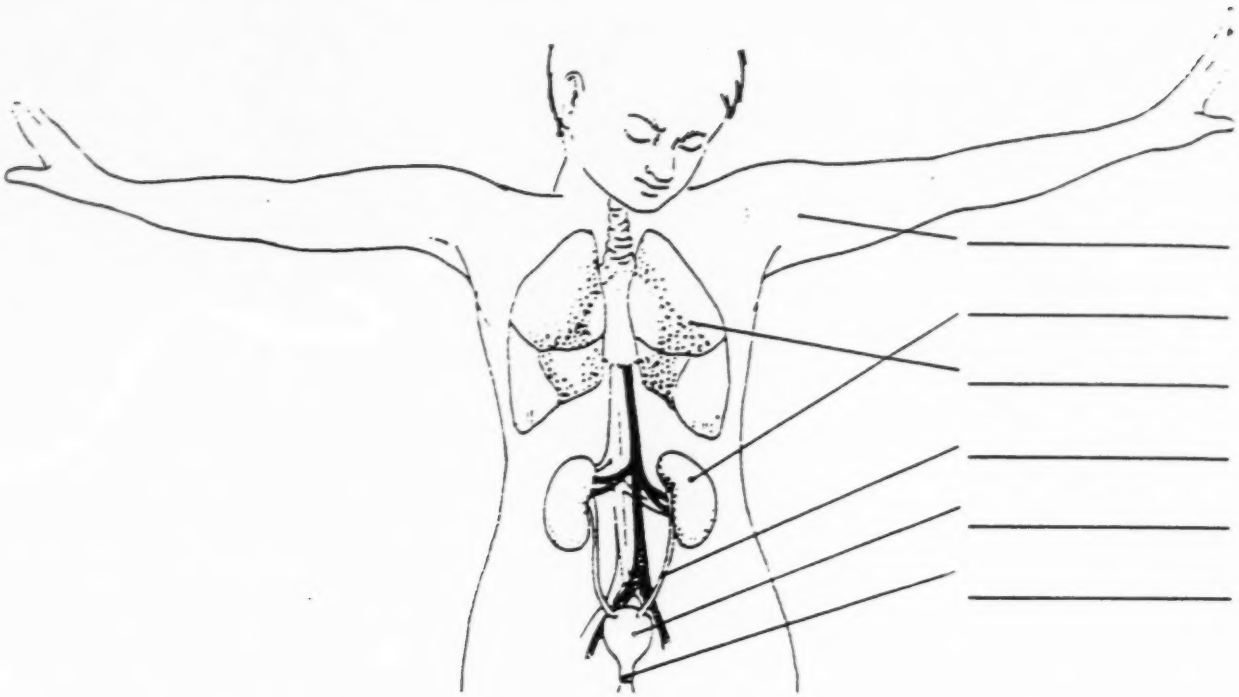
WASTE REMOVAL

Label the excretory organs: skin, lungs, urethra, kidneys, ureter, bladder.



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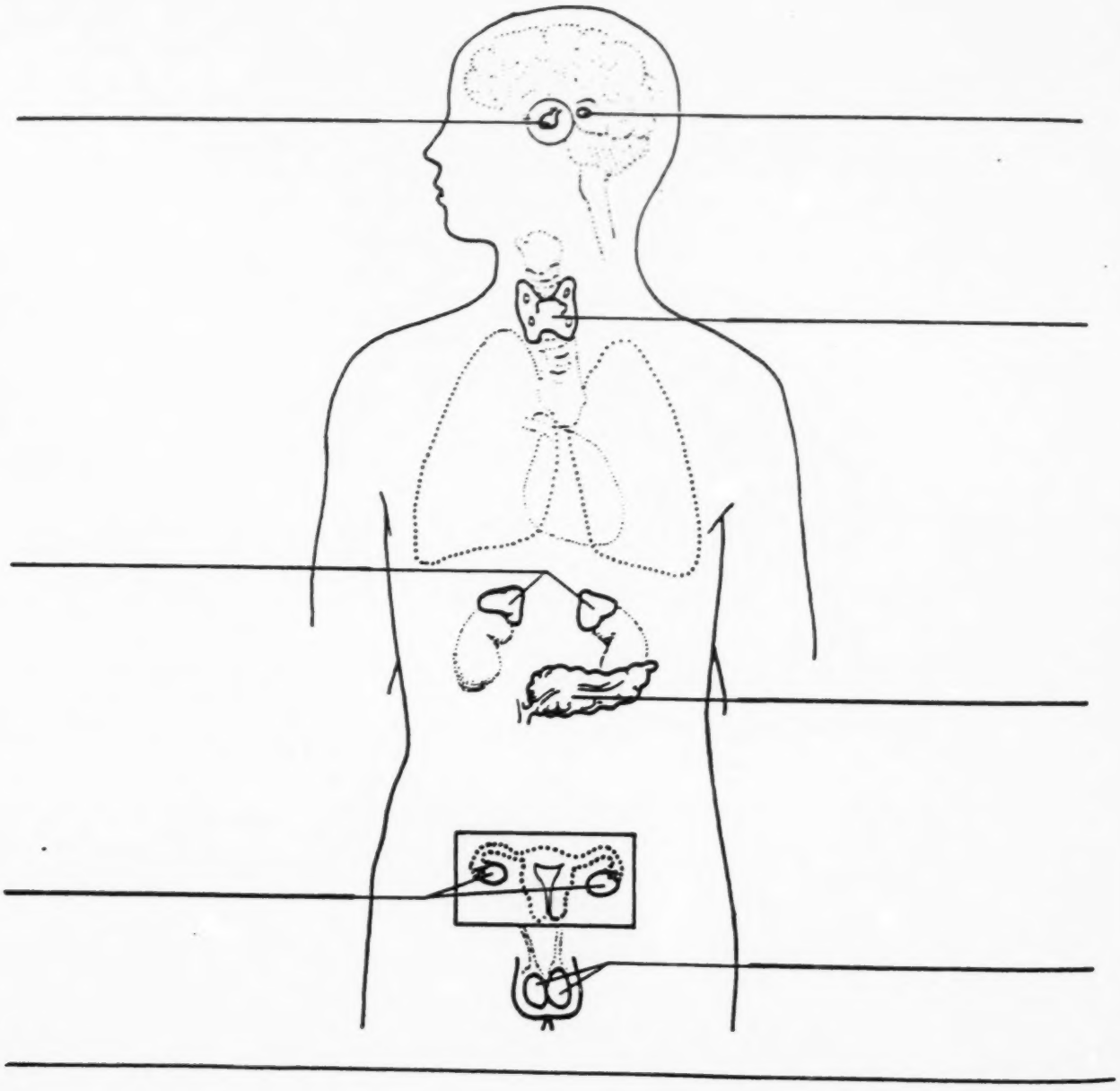

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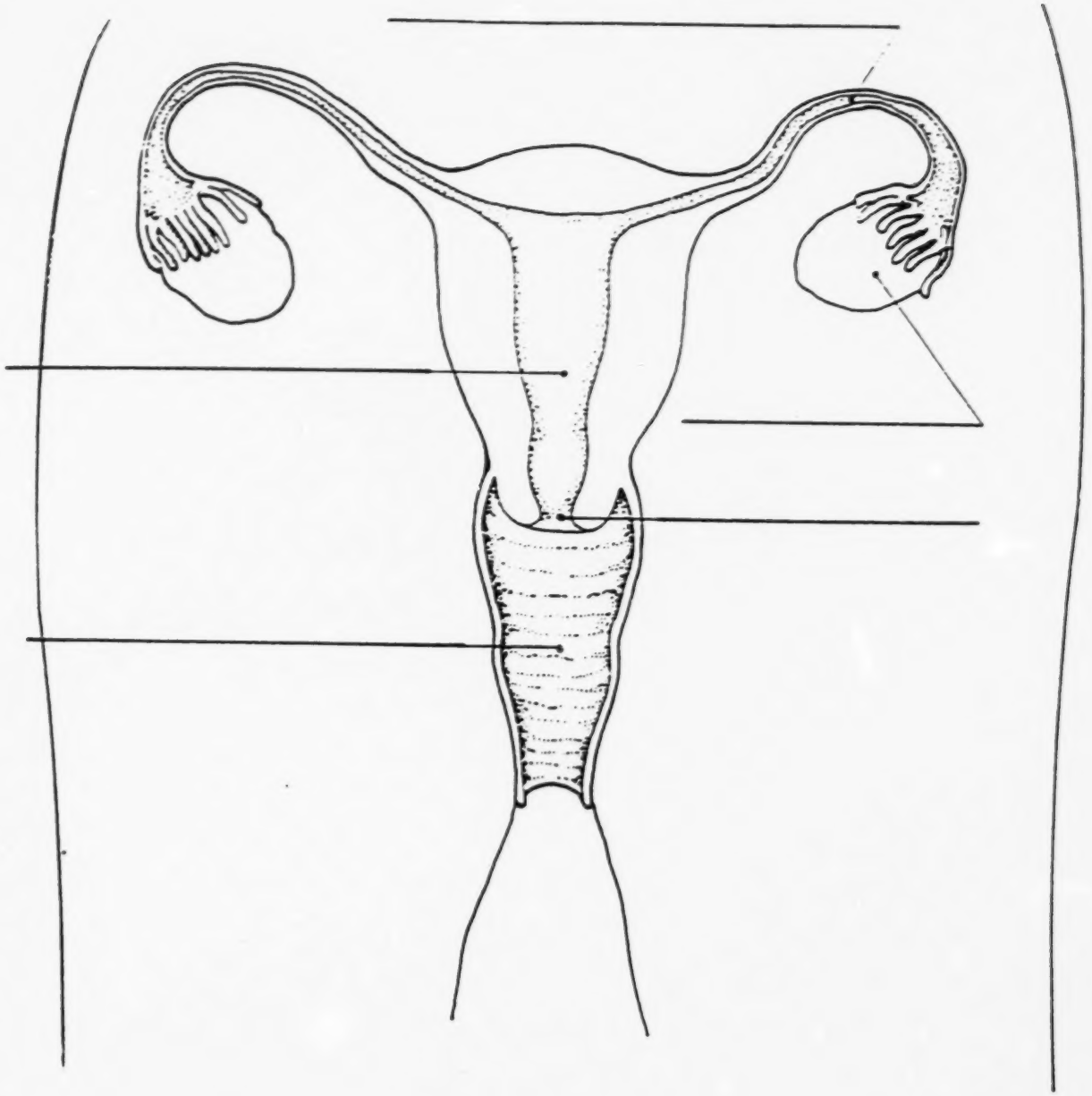

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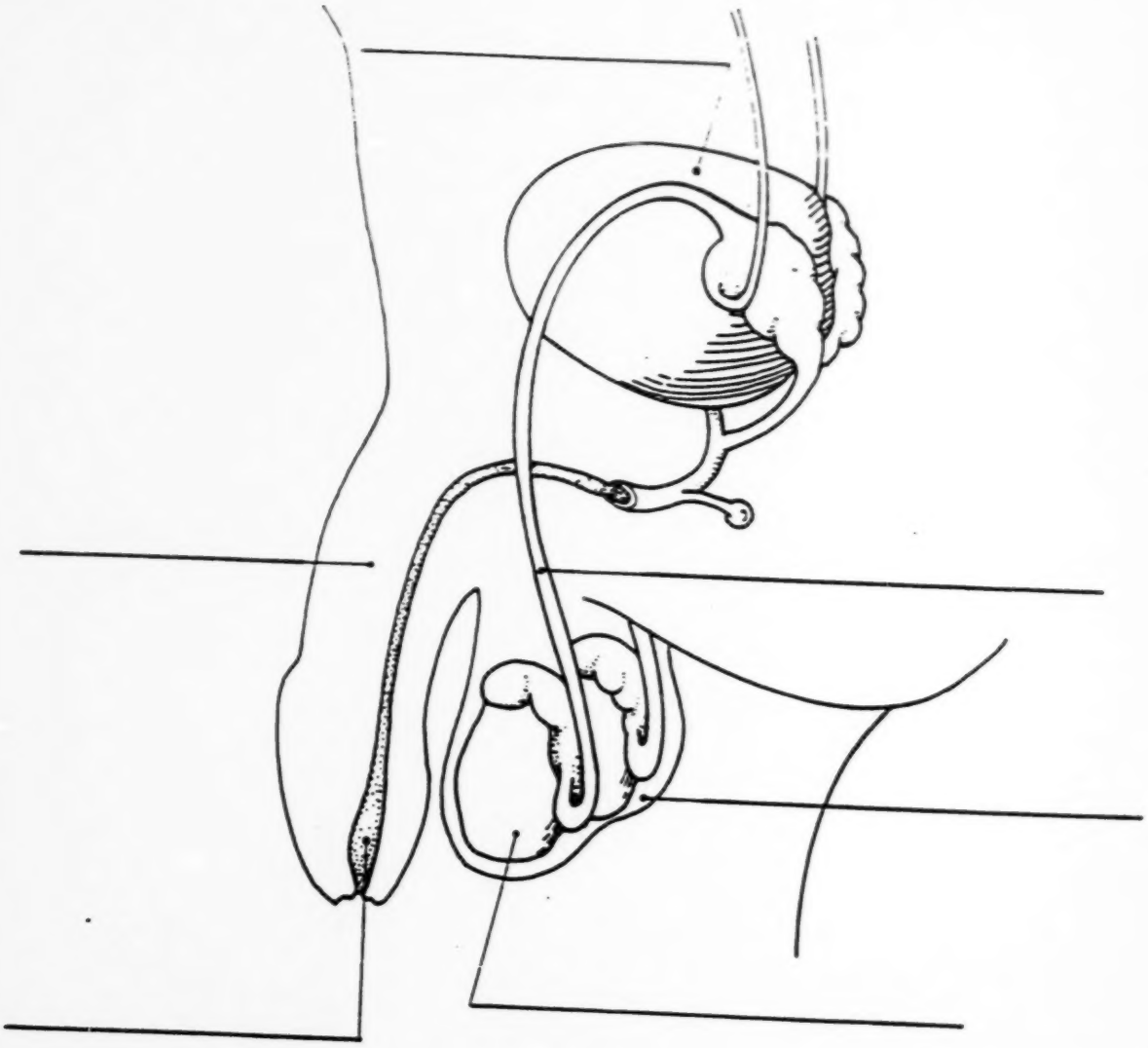

METRIC-ENGLISH CONVERSION FORMULAS

CONVERT BETWEEN UNITS USING THE CONVERSION FACTOR. MULTIPLY TO CHANGE TO A SMALLER UNIT AND DIVIDE TO CHANGE TO A LARGER UNIT.

Convert 154 pounds to kilograms
1 kg = 2.2 lb
The conversion factor is 2.2
The conversion is to a larger unit. Divide by the conversion factor.

154 - 2.2 = 70 kg

.....

Convert 22 inches to centimeters
1 in = 2.5 cm
The conversion factor is 2.5

The conversion is to a smaller unit. Multiply by the conversion factor.
22 x 2.5 = 55
22 in = 55 cm

CONVERSIONS FROM CELSIUS TO FAHRENHEIT

Multiply 1.8 times degrees Celsius
Add 32
Result is degrees Fahrenheit
F = 1.8 C + 32

Convert 37 C (normal body temperature) to Fahrenheit
F = 1.8 C + 32
1.8 (37) + 32
66.6 + 32
98.6 F